

**For Reference**

---

**NOT TO BE TAKEN FROM THIS ROOM**



Ex LIBRIS  
UNIVERSITATIS  
ALBERTAENSIS





Digitized by the Internet Archive  
in 2023 with funding from  
University of Alberta Library

<https://archive.org/details/McEwen1972>











THE UNIVERSITY OF ALBERTA

THE EFFECT OF TRAINING IN INTERACTION ANALYSIS ON THE  
VERBAL CLASSROOM BEHAVIOR OF HIGH SCHOOL  
TEACHERS OF VOIX ET IMAGES DE FRANCE

by



NELLY ZURCHER McEWEN

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH  
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE  
OF MASTER OF EDUCATION

DEPARTMENT OF SECONDARY EDUCATION

EDMONTON, ALBERTA

FALL, 1972





UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled The Effect of Training in Interaction Analysis on the Verbal Classroom Behavior of High School Teachers of Voix et Images de France submitted by Nelly Zurcher McEwen in partial fulfilment of the requirements for the degree of Master of Education.



## ABSTRACT

The major purpose of the present study was to determine whether or not training in Flanders System of Interaction Analysis would result in a change in the verbal teaching behavior of high school Voix et Images de France teachers.

Control was created by limiting the sample to teachers who taught levels 11 and 21 of the program in semesterized high schools. Only the five steps, T2a to T4a, of the transpositional phase were observed.

The ten teachers, who volunteered to take part in the study, were matched on the basis of similar educational training and teaching experience. One teacher from each pair was then randomly assigned to the experimental group while the other was designated as the control teacher.

The Flanders System of Interaction Analysis was used both as the training tool and the observational instrument. The treatment for the experimental group consisted of four weekly three-hour training sessions in interaction analysis. Each experimental teacher was provided with feedback by means of a weekly fifteen minute audiotape of his teaching which was brought in. The control group received no training.

All teachers were observed on two consecutive days for thirty minutes on each occasion before the training began and again at the conclusion of the treatment. The experimental group was further





observed, in an identical manner, six weeks after the post-training observations.

Eight hypotheses, grouped according to inter-group, intra-group, and individual teacher comparisons, were postulated each having 12 identical sub-hypotheses which consisted of the following indices: I/D ratio, revised i/d ratio, i/d row 8, i/d rows 8 and 9, extended i/d ratio, extended indirect influence, extended direct influence, vicious circle, 3-3 cell, 9-9 cell, teacher talk, and student talk. The 0.001 level of statistical significance was chosen to reject the null hypothesis.

The results indicated that initially the two groups were similar in behavior. After the treatment, the experimental group had significantly changed on 9 of the 12 indices, the exceptions being the I/D ratio, extended direct influence, and the vicious circle. The control group had not significantly changed its behavior. Six weeks after the post-treatment observations, the experimental group demonstrated a further change on 9 of the 12 indices, excepting the I/D ratio, i/d row 8, and i/d rows 8 and 9. Individual control teachers maintained fairly stable behaviors as measured by the selected indices. Individual experimental teachers demonstrated differing numbers and rates of behavioral changes.

It was concluded that the training program had been successful in evolving some behavioral changes in the teachers. Many implications were also derived from the study about the Voix et Images de France method of French instruction, the Flanders System of Interaction Analysis as a training instrument, in-service education using inter-





action analysis, and research using observational systems.



## ACKNOWLEDGEMENTS

The writer is indebted to the members of her thesis committee for their assistance throughout the study. The advice and encouragement of her thesis supervisor, Dr. M. J. Monod, the invaluable assistance of Dr. H. Kass, and the helpful suggestions of Dr. M. P. Browne are hereby acknowledged.

Similarly indebted to Mr. Jim Jones, who gave willingly of his time to act as the other observer, the writer wishes to express her appreciation for his interest in the study.

Thanks are extended to Messrs. Don Seidle and Lub Wojtiw for their assistance with the computer analyses of the data.

The writer is grateful to Mr. Larry Fleisher for the interaction analysis training material which he made available.

Appreciation is extended to the Edmonton Public School Board for its permission to conduct the research in its classes.

Without the co-operation and enthusiasm of the ten teachers who participated in the experiment, there would be no study. Although these teachers must remain anonymous, the success of the study rests largely with them. To these teachers, the writer wishes to express her sincerest gratitude.

The patience and understanding of the writer's husband, John, were extremely important to the completion of the study. To him is extended a special thank you.





## TABLE OF CONTENTS

| CHAPTER                                     | PAGE |
|---------------------------------------------|------|
| I. THE PROBLEM. . . . .                     | 1    |
| INTRODUCTION. . . . .                       | 1    |
| NEED FOR THE STUDY. . . . .                 | 7    |
| STATEMENT OF THE PROBLEM. . . . .           | 11   |
| PURPOSE OF THE STUDY. . . . .               | 11   |
| ASSUMPTIONS . . . . .                       | 11   |
| DEFINITION OF TERMS . . . . .               | 12   |
| DESIGN. . . . .                             | 15   |
| DELIMITATIONS . . . . .                     | 17   |
| LIMITATIONS . . . . .                       | 18   |
| HYPOTHESES. . . . .                         | 19   |
| OVERVIEW. . . . .                           | 20   |
| II. REVIEW OF RELATED RESEARCH . . . . .    | 22   |
| IN-SERVICE RESEARCH . . . . .               | 22   |
| PRE-SERVICE RESEARCH. . . . .               | 31   |
| III. DESIGN OF THE STUDY. . . . .           | 37   |
| VOIX ET IMAGES DE FRANCE. . . . .           | 37   |
| SAMPLE. . . . .                             | 43   |
| INSTRUMENT. . . . .                         | 47   |
| OBSERVER TRAINING AND RELIABILITY . . . . . | 52   |
| DATA COLLECTION . . . . .                   | 57   |
| INDICES . . . . .                           | 59   |



| CHAPTER                                                                                          | PAGE |
|--------------------------------------------------------------------------------------------------|------|
| STATISTICAL ANALYSIS. . . . .                                                                    | 61   |
| IV. TREATMENT. . . . .                                                                           | 69   |
| INTRODUCTION. . . . .                                                                            | 69   |
| TREATMENT . . . . .                                                                              | 73   |
| FIRST SESSION . . . . .                                                                          | 73   |
| SECOND SESSION. . . . .                                                                          | 78   |
| THIRD SESSION . . . . .                                                                          | 82   |
| FOURTH SESSION. . . . .                                                                          | 85   |
| EXTRA SESSIONS. . . . .                                                                          | 88   |
| V. ANALYSIS, RESULTS, AND INTERPRETATION. . . . .                                                | 90   |
| INTRODUCTION. . . . .                                                                            | 90   |
| FRAMEWORK FOR INTERPRETATION OF RESULTS . . . . .                                                | 90   |
| INTER-GROUP CORRELATION . . . . .                                                                | 94   |
| GROUP BEHAVIOR MODIFICATION . . . . .                                                            | 106  |
| INDIVIDUAL BEHAVIOR MODIFICATION. . . . .                                                        | 122  |
| VI. SUMMARY, GENERALIZATIONS, IMPLICATIONS, AND<br>RECOMMENDATIONS FOR FURTHER RESEARCH. . . . . | 176  |
| SUMMARY . . . . .                                                                                | 176  |
| GENERALIZATIONS . . . . .                                                                        | 178  |
| IMPLICATIONS. . . . .                                                                            | 183  |
| Voix et Images de France . . . . .                                                               | 183  |
| Flanders System of Interaction Analysis. . . . .                                                 | 186  |
| In-Service Education . . . . .                                                                   | 188  |
| Research using Observation Systems . . . . .                                                     | 189  |
| RECOMMENDATIONS FOR FURTHER RESEARCH. . . . .                                                    | 190  |



| CHAPTER                                          | PAGE |
|--------------------------------------------------|------|
| BIBLIOGRAPHY . . . . .                           | 192  |
| APPENDICES . . . . .                             | 201  |
| APPENDIX A: STUDENT ATTITUDE INVENTORY . . . . . | 202  |
| APPENDIX B: PROFESSIONAL INFORMATION . . . . .   | 206  |
| APPENDIX C: PILOT STUDY. . . . .                 | 209  |
| APPENDIX D: EPISODE C. . . . .                   | 213  |
| APPENDIX E: FEEDBACK INFORMATION . . . . .       | 219  |





# LIST OF TABLES

| TABLE                                                                                                                                | PAGE |
|--------------------------------------------------------------------------------------------------------------------------------------|------|
| I. COMPARISON OF TRAINING AND EXPERIENCE FOR THE<br>EXPERIMENTAL AND CONTROL GROUPS . . . . .                                        | 45   |
| II. ADDITIONAL DESCRIPTIVE DATA FOR THE TWO GROUPS . . . . .                                                                         | 45   |
| III. AVERAGE CLASS SIZE AND SEX DISTRIBUTION OF THE<br>PARTICIPATING CLASSES . . . . .                                               | 46   |
| IV. OBSERVER RELIABILITY . . . . .                                                                                                   | 55   |
| V. OBSERVER RELIABILITY . . . . .                                                                                                    | 56   |
| VI. STEPS OF TRANSPOSITION DONE BY THE TEACHERS DURING<br>EACH OBSERVATION PERIOD . . . . .                                          | 92   |
| VII. NUMBER OF TIMES EACH STEP OF TRANSPOSITION WAS<br>DONE BY THE TWO GROUPS. . . . .                                               | 93   |
| VIII. COMPARISON OF THE EXPERIMENTAL AND CONTROL GROUPS<br>ON RATIOS BEFORE THE TREATMENT. . . . .                                   | 96   |
| IX. COMPARISON OF THE EXPERIMENTAL AND CONTROL GROUPS<br>ON ISOLATED CELLS AND AREAS OF THE MATRIX BEFORE<br>THE TREATMENT . . . . . | 99   |
| X. COMPARISON OF THE EXPERIMENTAL AND CONTROL GROUPS<br>AFTER THE TREATMENT . . . . .                                                | 101  |
| XI. COMPARISON OF THE EXPERIMENTAL AND CONTROL GROUPS<br>ON ISOLATED CELLS AND AREAS OF THE MATRIX AFTER<br>THE TREATMENT . . . . .  | 102  |
| XII. COMPARISON OF PRE- AND POST-TREATMENT RATIOS OF<br>THE CONTROL GROUP . . . . .                                                  | 108  |
| XIII. COMPARISON OF PRE- AND POST-TREATMENT MEASURES<br>ON ISOLATED CELLS AND AREAS OF THE CONTROL<br>GROUP . . . . .                | 109  |
| XIV. COMPARISON OF PRE- AND POST-TREATMENT RATIOS OF<br>THE EXPERIMENTAL GROUP. . . . .                                              | 113  |



| TABLE                                                                                                                   | PAGE |
|-------------------------------------------------------------------------------------------------------------------------|------|
| XV. COMPARISON OF PRE- AND POST-TREATMENT INDICES<br>OF THE EXPERIMENTAL GROUP . . . . .                                | 113  |
| XVI. COMPARISON OF POST- AND DELAYED POST-TREATMENT<br>RATIOS FOR THE EXPERIMENTAL GROUP . . . . .                      | 115  |
| XVII. COMPARISON OF POST- AND DELAYED POST-TREATMENT<br>INDICES FOR THE EXPERIMENTAL GROUP. . . . .                     | 117  |
| XVIII. PRE- AND POST-TREATMENT I/D RATIOS FOR EACH<br>TEACHER IN THE CONTROL GROUP. . . . .                             | 123  |
| XIX. PRE- AND POST-TREATMENT REVISED i/d RATIOS FOR<br>EACH TEACHER IN THE CONTROL GROUP . . . . .                      | 125  |
| XX. i/d ROW 8 FOR EACH TEACHER IN THE CONTROL GROUP. . . . .                                                            | 127  |
| XXI. i/d ROWS 8 AND 9 FOR EACH TEACHER IN THE<br>CONTROL GROUP . . . . .                                                | 127  |
| XXII. EXTENDED i/d RATIOS FOR EACH TEACHER IN THE<br>CONTROL GROUP . . . . .                                            | 128  |
| XXIII. EXTENDED INDIRECT INFLUENCE FOR EACH TEACHER<br>IN THE CONTROL GROUP. . . . .                                    | 131  |
| XXIV. EXTENDED DIRECT INFLUENCE FOR EACH TEACHER IN<br>THE CONTROL GROUP . . . . .                                      | 131  |
| XXV. VICIOUS CIRCLE FOR EACH TEACHER IN THE CONTROL<br>GROUP . . . . .                                                  | 132  |
| XXVI. 3-3 CELL FOR EACH TEACHER IN THE CONTROL GROUP . . . . .                                                          | 134  |
| XXVII. 9-9 CELL FOR EACH TEACHER IN THE CONTROL GROUP . . . . .                                                         | 134  |
| XXVIII. TEACHER TALK FOR EACH TEACHER IN THE CONTROL GROUP . . .                                                        | 136  |
| XXIX. STUDENT TALK FOR EACH TEACHER IN THE CONTROL GROUP . . .                                                          | 138  |
| XXX. DIRECTION OF CHANGE BETWEEN PRE- AND POST-<br>TREATMENT INDICES FOR EACH TEACHER IN THE<br>CONTROL GROUP . . . . . | 140  |
| XXXI. BEHAVIOR PATTERN FOR EACH CONTROL TEACHER BEFORE<br>AND AFTER THE TREATMENT . . . . .                             | 141  |





| TABLE                                                                                                                 | PAGE |
|-----------------------------------------------------------------------------------------------------------------------|------|
| XXXII. I/D RATIO FOR EACH TEACHER IN THE EXPERIMENTAL GROUP . . . . .                                                 | 143  |
| XXXIII. REVISED i/d RATIO FOR EACH TEACHER IN THE EXPERIMENTAL GROUP. . . . .                                         | 144  |
| XXXIV. i/d ROW 8 FOR EACH TEACHER IN THE EXPERIMENTAL GROUP . . . . .                                                 | 146  |
| XXXV. i/d ROWS 8 AND 9 FOR EACH TEACHER IN THE EXPERIMENTAL GROUP. . . . .                                            | 146  |
| XXXVI. EXTENDED i/d RATIOS FOR EACH TEACHER IN THE EXPERIMENTAL GROUP. . . . .                                        | 148  |
| XXXVII. EXTENDED INDIRECT INFLUENCE FOR EACH TEACHER IN THE EXPERIMENTAL GROUP . . . . .                              | 148  |
| XXXVIII. EXTENDED DIRECT INFLUENCE FOR EACH TEACHER IN THE EXPERIMENTAL GROUP . . . . .                               | 149  |
| XXXIX. VICIOUS CIRCLE FOR EACH TEACHER IN THE EXPERIMENTAL GROUP. . . . .                                             | 151  |
| XL. 3-3 CELL FOR EACH TEACHER IN THE EXPERIMENTAL GROUP. . .                                                          | 151  |
| XLI. 9-9 CELL FOR EACH TEACHER IN THE EXPERIMENTAL GROUP. . .                                                         | 152  |
| XLII. TEACHER TALK FOR EACH TEACHER IN THE EXPERIMENTAL GROUP . . . . .                                               | 154  |
| XLIII. STUDENT TALK FOR EACH TEACHER IN THE EXPERIMENTAL GROUP . . . . .                                              | 154  |
| XLIV. DIRECTION OF CHANGE BETWEEN PRE- AND POST-TREATMENT INDICES FOR EACH TEACHER IN THE EXPERIMENTAL GROUP. . . . . | 156  |
| XLV. I/D RATIO FOR EACH TEACHER IN THE EXPERIMENTAL GROUP . . . . .                                                   | 158  |
| XLVI. REVISED i/d RATIO FOR EACH TEACHER IN THE EXPERIMENTAL GROUP. . . . .                                           | 158  |
| XLVII. i/d ROW 8 FOR EACH TEACHER IN THE EXPERIMENTAL GROUP . . . . .                                                 | 160  |
| XLVIII. i/d ROWS 8 AND 9 FOR EACH TEACHER IN THE EXPERIMENTAL GROUP. . . . .                                          | 160  |



| TABLE                                                                                                                                    | PAGE |
|------------------------------------------------------------------------------------------------------------------------------------------|------|
| XLIX. EXTENDED i/d RATIO FOR EACH TEACHER IN THE<br>EXPERIMENTAL GROUP. . . . .                                                          | 162  |
| L. EXTENDED INDIRECT INFLUENCE FOR EACH TEACHER<br>IN THE EXPERIMENTAL GROUP . . . . .                                                   | 162  |
| LI. EXTENDED DIRECT INFLUENCE FOR EACH TEACHER IN THE<br>EXPERIMENTAL GROUP. . . . .                                                     | 163  |
| LII. VICIOUS CIRCLE INDEX FOR EACH TEACHER IN THE<br>EXPERIMENTAL GROUP. . . . .                                                         | 164  |
| LIII. 3-3 CELL INDEX FOR EACH TEACHER IN THE EXPERIMENTAL<br>GROUP . . . . .                                                             | 165  |
| LIV. 9-9 CELL INDEX FOR EACH TEACHER IN THE EXPERIMENTAL<br>GROUP . . . . .                                                              | 166  |
| LV. TEACHER TALK FOR EACH TEACHER IN THE EXPERIMENTAL<br>GROUP . . . . .                                                                 | 168  |
| LVI. STUDENT TALK FOR EACH TEACHER IN THE EXPERIMENTAL<br>GROUP . . . . .                                                                | 168  |
| LVII. DIRECTION OF CHANGE BETWEEN THE POST- AND DELAYED<br>POST-TREATMENT INDICES FOR EACH TEACHER IN THE<br>EXPERIMENTAL GROUP. . . . . | 170  |
| LVIII. TOTAL NUMBER OF SIGNIFICANT CHANGES FOR EACH<br>EXPERIMENTAL TEACHER. . . . .                                                     | 172  |
| LIX. TEACHING PATTERNS OF THE EXPERIMENTAL TEACHERS<br>ON ALL THREE PERIODS OF OBSERVATION . . . . .                                     | 173  |
| LX. SUMMARY TABLE OF THE HYPOTHESES. . . . .                                                                                             | 179  |
| LXI. NUMBER OF STUDENTS IN FRENCH 11 AND FRENCH 21. . . . .                                                                              | 203  |
| LXII. STUDENT ATTITUDES TOWARD THE STUDY OF VOIX ET<br>IMAGES DE FRANCE. . . . .                                                         | 204  |
| LXIII. COMPARISON OF PERCEIVED COURSE OBJECTIVE WITH<br>ITS PERCEIVED ACHIEVEMENT . . . . .                                              | 205  |
| LXIV. COMPARISON OF RATIOS FOR PILOT TEACHER I ON THE<br>TWO OBSERVATIONS. . . . .                                                       | 211  |
| LXV. COMPARISON OF INDICES FOR PILOT TEACHER I ON THE<br>TWO OBSERVATIONS. . . . .                                                       | 211  |



| TABLE                                                                                 | PAGE |
|---------------------------------------------------------------------------------------|------|
| LXVI. COMPARISON OF RATIOS FOR PILOT TEACHER II ON THE<br>TWO OBSERVATIONS. . . . .   | 212  |
| LXVII. COMPARISON OF INDICES FOR PILOT TEACHER II IN THE<br>TWO OBSERVATIONS. . . . . | 212  |





## LIST OF FIGURES

| FIGURE                                                                                                                | PAGE |
|-----------------------------------------------------------------------------------------------------------------------|------|
| 1. Circular Verbal Information Flow in the Classroom . . . . .                                                        | 2    |
| 2. Flanders' System of Interaction Analysis. . . . .                                                                  | 14   |
| 3. The Four Phases of the Audio-Visual Method. . . . .                                                                | 39   |
| 4. Areas of the Matrix which are Statistically Tested. . . . .                                                        | 62   |
| 5. Objectives of the Training Program. . . . .                                                                        | 74   |
| 6. Tabulated Matrix of T2a Episode C . . . . .                                                                        | 77   |
| 7. Descriptive Indices of T2a Episode C. . . . .                                                                      | 80   |
| 8. Histogram of T2a Episode C. . . . .                                                                                | 81   |
| 9. Flow Chart of T2a Episode C . . . . .                                                                              | 84   |
| 10. Some Strategies to Improve the Quantity and Quality<br>of Student Participation . . . . .                         | 86   |
| 11. Comparison of Talk Distribution Between the<br>Experimental and Control Groups Before the<br>Treatment. . . . .   | 98   |
| 12. Comparison of Talk Distribution Between the<br>Experimental and Control Groups After the<br>Treatment. . . . .    | 104  |
| 13. Comparison of Talk Distribution Before and After<br>the Treatment for the Control Group. . . . .                  | 111  |
| 14. Comparison of Pre-, Post-, and Delayed Post-<br>treatment Talk Distribution of the Experimental<br>Group. . . . . | 119  |
| 15. Category Distribution for Feedback Tapes. . . . .                                                                 | 220  |
| 16. First Feedback Tape . . . . .                                                                                     | 221  |
| 17. Second Feedback Tape. . . . .                                                                                     | 222  |
| 18. Third Feedback Tape . . . . .                                                                                     | 223  |



## CHAPTER I

### THE PROBLEM

#### INTRODUCTION

With the advent of behavioral psychology, a tendency to measure many aspects of life in terms of behavior has arisen: how and why certain behavior patterns occur. Such an approach entails a careful study of actual human behavior.

In the educational setting, it is the behavior of the teacher and his students which has come under scrutiny. The process involved between the teacher and his students is essentially one of verbal communication in a group setting. Classroom verbal communication exists in a setting of social interaction wherein the teacher and students are continually influencing one another.

Zahorik<sup>1</sup> has depicted classroom interaction as an adaptation and simplification of Ryans' model based on systems theory, information theory, and cybernetics. The circular verbal information flow between teacher and pupil systems is presented in Figure 1. The teacher, as a result of information processing, produces output in the form of pupil solicitations, lectures, and direct pupil feedback. This verbal output then becomes input to the pupil system. The pupil then

---

<sup>1</sup>J. A. Zahorik. "The Nature and Value of Teacher Verbal Behavior," (unpublished doctoral dissertation, University of Wisconsin, 1966), pp. 10-12.



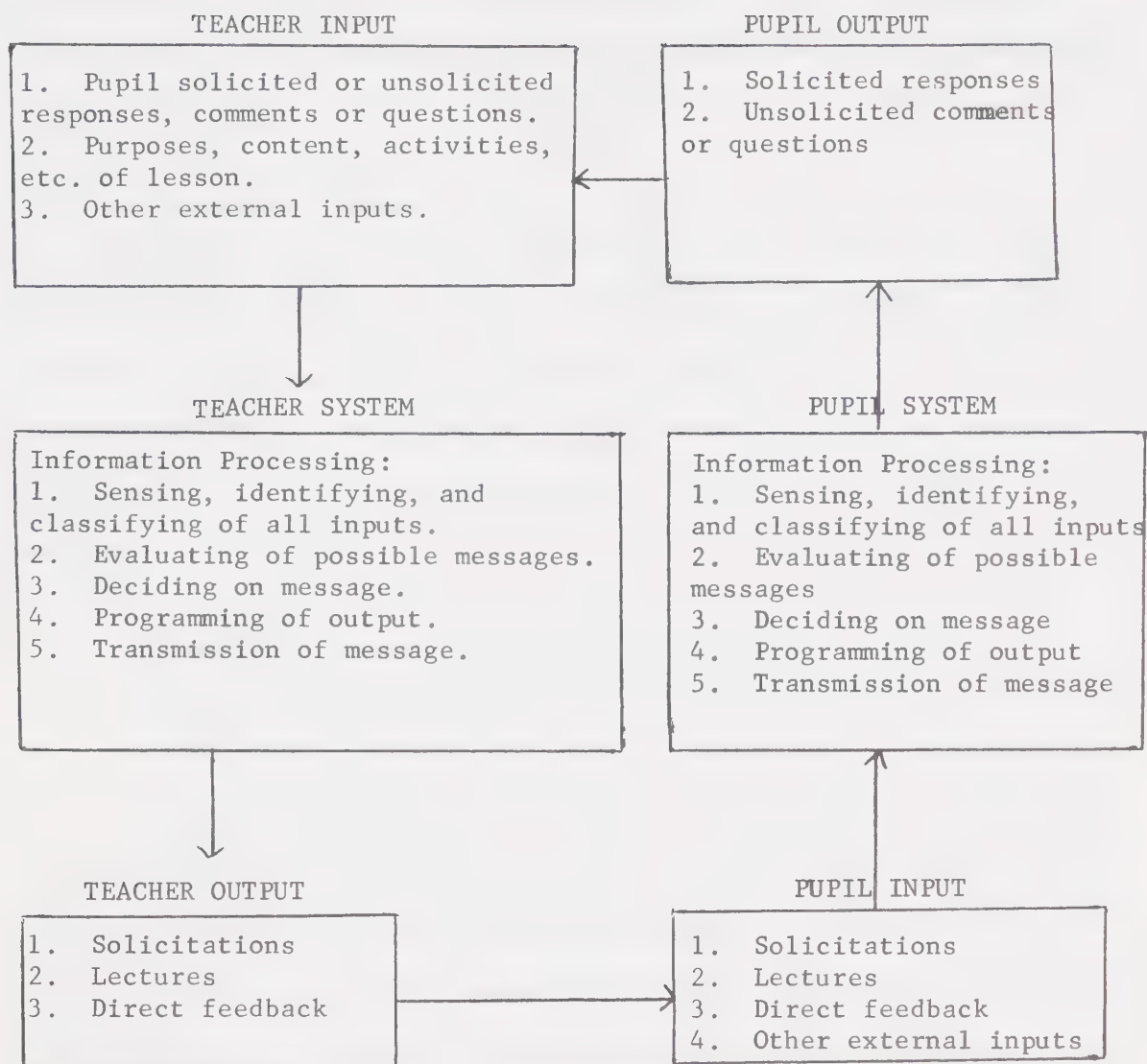


Figure 1

Circular Verbal Information Flow in the Classroom<sup>2</sup>

<sup>2</sup>Ibid., p. 11.





processes this information and emits verbal output in the form of solicited responses or unsolicited comments. These pupil outcomes, along with lesson purposes, content, and activities then become teacher system inputs and the circle is completed. The two systems are in continual interaction.

In order to describe and measure in quantitative terms what behavior occurs in the classroom, a number of observational systems have been devised. As it is a physical impossibility to measure everything that occurs in the classroom certain aspects of behavior have been abstracted in these systems in order to make certain phenomena understandable.<sup>3</sup>

. . . The process of selecting the behaviors to be recorded is essentially one of identifying a limited range of behavior relevant to the purpose of the study and of constructing categories or items to be used by the observer.<sup>4</sup>

The earliest attempts to measure classroom behavior grew out of dissatisfaction with existing methods of supervision and developed in the general direction of identifying effective teacher behavior.<sup>5</sup> Social psychologists, whose fundamental interest was in interactions between pupil and pupil and teacher and pupil, also took an early interest in classroom behavior.<sup>6</sup>

---

<sup>3</sup>D. M. Medley and H. E. Mitzel, "Measuring Classroom Behavior by Systematic Observation," Handbook of Research on Teaching, ed. N. L. Gage (Chicago: Rand McNally Co., 1963), p. 251.

<sup>4</sup>Ibid.

<sup>5</sup>Ibid., p. 263.

<sup>6</sup>Ibid.



Out of the early research, the dimension of classroom behavior which became known as classroom climate, has been measured perhaps more successfully than others. Classroom climate refers to "generalized attitudes toward the teacher and the class that the pupils share in common. . . . The development of these attitudes is an outgrowth of classroom social interaction."<sup>7</sup> Although there are differences in the terms applied to the dimension as it has been operationally defined in various studies: dominative-integrative (Anderson); teacher-centered versus learner-centered (Withall); hostile-supportive (Medley and Mitzel); direct-indirect (Flanders), there is little doubt that all are referring to highly similar dimensions of behavior which are reliably measurable and important in educational theory.<sup>8</sup>

In the conventional classroom, the teacher-student relationships are essentially "superior-subordinate."<sup>9</sup> It is the responsibility of the teacher to direct classroom activities. Both the teacher and the students expect the teacher to initiate and to control learning activities in a total class setting. Therefore, the teacher's prime responsibility is to guide the learning activities of his students. "The teacher, then, is continually exerting influence on the students

---

<sup>7</sup> N. A. Flanders, Teacher Influence, Pupil Attitudes and Achievement (Washington: U. S. Department of Health, Education and Welfare, Office of Education, 1965), p. 3.

<sup>8</sup> Medley and Mitzel, op. cit., p. 275.

<sup>9</sup> N. A. Flanders, "Teacher Influence in the Classroom," Interaction Analysis: Theory, Research and Application, eds. E. J. Amidon and J. B. Hough (Reading, Mass: Addison-Wesley Publishing Co., 1967), p. 107.



and on the learning situation."<sup>10</sup>

Because of this dominant role, it is imperative that the teacher learn to control his behavior in such a way that the best possible learning conditions are provided for his students. Behavior is manifested both verbally and non-verbally. Flanders<sup>11</sup> has assumed that the verbal behavior of an individual is an adequate sample of his total behavior. His analysis of behavior, therefore, concentrates on the verbal behavior of a teacher.

The purpose of interaction analysis is to study teaching behavior by keeping track of selected verbal events that occur during classroom interaction. Flanders cites two applications of these activities:

1. to help an individual develop and control his teaching behavior (both by pre-service and in-service training); and
2. to discover through research how to explain the variations which occur in the chain of classroom events. (These explanations are meant to focus on teaching behavior and its relationship to classroom interaction and educational outcomes.)<sup>12</sup>

Flanders gives the consequences of these purposes.<sup>13</sup> If the

---

<sup>10</sup>E. J. Amidon and N. A. Flanders, The Role of the Teacher in the Classroom, (Minneapolis: Association for Productive Teaching, 1971), p. 1.

<sup>11</sup>Flanders, op. cit., p. 121.

<sup>12</sup>N. A. Flanders, Analyzing Teaching Behavior (Reading, Mass: Addison-Wesley Publishing Co., 1970), p. 3.

<sup>13</sup>Ibid.



most salient activities in teaching are the direct person-to-person contacts and the more indirect teacher-to-class contacts, the most important concepts are those which are descriptive of the interactive contacts. The search then, is for the fewest number of ideas necessary to help a person develop and control his teaching behavior as it influences the educational development of his students.

In the area of second language instruction, the teacher is vitally concerned with verbal behavior. In the audio-visual method of second language instruction, the goal has been defined as native-like proficiency in the target language.

More precisely, the method attempts to develop "linguistic competence", the knowledge of the function and structure of a language which allows a speaker to spontaneously produce novel spoken and written expressions for the purpose of communication. Operationally then, the goal is to allow students to spontaneously communicate in a manner acceptable to the linguistic and cultural matrix of the target language.<sup>14</sup>

Since language is both verbal behavior and the object of second language instruction, it is the very essence of the communicative process which is at stake in the second language classroom. It is this process of verbal communication so vital in the second language program, which is the focus of the present study. Concern not only for the verbal behavior of the classroom teacher of French, but also for ways in which classroom verbal interaction may be improved to insure that the

---

<sup>14</sup>C. Renard and C. H. Heinle, Implementing Voix et Images de France (Part I) in American Schools and Colleges (Philadelphia: Chilton Books, 1969), p. 3.





objectives of second language instruction are achieved, resulted in the development of the present study.

#### NEED FOR THE STUDY

Of late, concern has been expressed that the classroom climate in second language programs is remiss in encouraging students to learn effectively. The second language profession has been urged to relate the knowledge of human behavior to the area of second language instruction.<sup>15</sup>

Moskowitz<sup>16</sup> has made a case for the feelings of alienation and insecurity which second language students feel, i.e., discrepancy between maturity level and ability to express oneself in the second language, lack of comprehension of the second language, and the expectation to participate frequently. As some of these phenomena seem to be peculiar to the second language environment, the classroom climate and emotions of the second language learner seem to be crucial to learning a second language.

To deal with these insecurities, one step may be to insure a climate of acceptance in the second language classroom. The improvement of classroom climate can be seen as humanizing the teaching and

---

<sup>15</sup>D. C. Bailey, "Foreign Language Teaching: The Human Gap," French Review, 39 (October, 1965), p. 116.

<sup>16</sup>G. Moskowitz, "The Fearsome Foreign Language Hour," French Review, 38 (May, 1965), pp. 781-786.



learning of second languages.<sup>17</sup> Explicitly,

We must become aware of students as emotional human beings, motivate them, and inspire a love of language for itself.<sup>18</sup>

A study of student attitudes toward the study of French as a second language was undertaken by the present author<sup>19</sup> to determine the nature of attitudes students held toward the method of French instruction Voix et Images de France. (The questions relevant to the present study and their analysis are reported in Appendix A.) The results of the attitude inventory suggest that the student respondents did not feel very confident in their Voix et Images classrooms, implying that a comfortable classroom environment may not exist in some cases. As well, the students indicated that the objective of the course, i.e., to speak French fluently, was perhaps not being achieved.

This attitude must surely cause one to raise questions about what is happening in these classrooms. One must ask whether there is a need for teachers in the Voix et Images de France program to become aware of their actual verbal teaching behavior in order that the results of classroom interaction be consistent with the stated objectives of the program. That is, it may be helpful to have each teacher examine his own behavior in the classroom so that each could determine its effects on his students.

---

<sup>17</sup>L. W. Cor, "Humanizing Language Study," French Review, 40 (May, 1967), p. 817.

<sup>18</sup>Ibid.

<sup>19</sup>N. McEwen, "Student Attitude Inventory, Modern Language Department, Harry Ainlay Composite High School," unpublished research paper, 1971.



Until the teacher can be made aware of aspects of his actual teaching behavior by means of a systematic instrument which can identify and quantify this behavior, he will likely be unable to objectively and effectively analyze his behavior, let alone change it. Once the teacher is aware of what he is doing and accepts the results his behavior has on his students, the question then arises as to what he will do about it. Will he change his behavior in such a way that the most positive benefits will accrue not only in terms of personal satisfaction but also in terms of positive gains in student attitude and achievement?

The first step for the improvement of classroom conditions appears thus to be the provision of conditions wherein the teacher can learn to identify his behavior and consequently, by means of some type of instruction, learn to exercise voluntary control over it.

Although a few studies have successfully provided in-service training for experienced teachers in the use of interaction analysis systems for quantifying verbal teaching behavior, relatively little has been done in the area of second language instruction. To date, most of the published research in interaction analysis and second language instruction has been reported by Moskowitz.<sup>20</sup> She has conducted both pre- and in-service training of second language teachers in the use of interaction analysis to modify teacher

---

<sup>20</sup> G. Moskowitz, "The Effects of Training Foreign Language Teachers in Interaction Analysis," Foreign Language Annals, 1 (March, 1968), pp. 218-35.





behavior. In two instances, second language teachers were taught Flanders System of Interaction Analysis and how to apply it to their teaching. The results of this training indicated that the teachers had developed more positive attitudes toward their teaching and their students and that they had changed their behavior in a positive direction. Her positive results are consistent with those reported for other subject areas.<sup>21</sup>

The concern with the climate of second language classrooms, the supportive evidence of the McEwen study, and the dearth of relevant second language instruction observational research have all contributed to the need for the present study. As the positive results reported in research studies would suggest that it is possible for a teacher to learn to control his verbal teaching behavior in the classroom, at least to some extent, once he has been given instruction in some system of interaction analysis, the present study has been undertaken.

The analysis of verbal teaching behavior in a Voix et Images de France classroom is an aim of the present study. Once the results have been found, whether or not it is possible to implement a more effective pattern of verbal teaching behavior by instructing the teacher in a method of interaction analysis as an in-service activity is to be investigated.

---

<sup>21</sup>Other subject areas include elementary classes, and secondary English, social studies, mathematics, and science.



## STATEMENT OF THE PROBLEM

The problem to be studied is the effect of instruction in and application of Flanders System of Interaction Analysis as an in-service activity on the behavior of secondary school teachers of Voix et Images de France.

## PURPOSE OF THE STUDY

There are two purposes to this study: first, to identify and quantify the behavior of the teacher in a high school French classroom where Voix et Images de France is the method of instruction; and second, to determine whether or not training in interaction analysis results in a change in teacher behavior.

## ASSUMPTIONS

Although numerous interaction systems are specifically designed to study different classroom behaviors, they possess important structural commonalities which permit them to be discussed collectively. Such systems are based on the following theoretical assumptions:

1. Classroom behavior can be observed and analyzed as a group process.
2. Group behavior, observed at a particular point in time for a given period of time, is meaningful behavior from which interpretations can be derived.
3. Group behavior observed in one situation shares certain fundamental relationships with groups studied in other situations, therefore, it is possible to derive generalizations about group behavior.



4. The behavior of individuals, acting within a group, is a process of behavioral interaction.

5. The behavioral process can be delineated into patterns. These patterns will be consistent providing that the conditions which maintain them are held constant.<sup>22</sup>

Of particular importance to the present study are two assumptions based on the Flanders system:

1. Verbal behavior is an adequate sample of total behavior.

2. Once a teacher has identified his behavior and been made sensitive to what effect this behavior has on his students, he will be able to control his behavior in such a manner as to improve the interactive process in the classroom. Implicit in this assumption is that the teacher will "want" to change his behavior in the stated desired direction.

#### DEFINITION OF TERMS

For purposes of this study, the following definitions apply:

1. Audio-visual method (AVM) - a system of second language instruction in which there is a constant inter-relationship of situation - context - picture - semantic group - meaning (global) organized and functioning as a structure.<sup>23</sup>

1.1 Voix et Images de France (VIF) - an audio-visual method of French instruction implemented by the Edmonton Public School Board as a

---

<sup>22</sup> N. R. Allon, "Systems of Interaction Analysis: A Discussion of Structural Limitations," Journal of Experimental Education, 38 (Winter, 1969), p. 1.

<sup>23</sup> Renard and Heinle, op. cit., p. 14.



six year sequential program. For a more complete documentation, the reader is referred to p. 37.

1.1.1 Transposition - the final phase of a VIF unit in which the variable elements are manipulated in order to promote mastery of the structures.

2. Interaction Analysis (IA) - a system for coding spontaneous verbal communication, arranging the data into a useful display, and then analyzing the results in order to study patterns of teaching and learning.<sup>24</sup>

2.1 Flanders' System of Interaction Analysis (FSIA) - one particular system of interaction analysis, classified as an affective system as it is concerned primarily with the emotional component of communication. This system is presented in Figure 2.

2.1.1 Classroom interaction - the chain of events which occur one after another, each occupying only a discrete segment of time.

2.1.2 Teacher behavior - verbalizations by the teacher which occur in the context of classroom interaction.

2.1.2.1 Indirect (I) teacher behavior consists "of soliciting the opinions or ideas of the pupils, applying or enlarging on those ideas, praising or encouraging the participation of pupils, or clarifying and accepting their feelings."<sup>25</sup>

---

<sup>24</sup>Flanders, Analyzing Teaching Behavior, p. 28.

<sup>25</sup>N. A. Flanders, "Teacher Influence in the Classroom," Interaction Analysis: Theory, Research, and Application, eds. E. J. Amidon and J. B. Hough (Reading: Addison-Wesley Publishing Co., 1967), p. 109.





|              |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TEACHER TALK | INDIRECT INFLUENCE | <p>1. <u>*ACCEPTS FEELING</u>: accepts and clarifies the feeling tone of the students in a nonthreatening manner. Feelings may be positive or negative. Predicting or recalling feelings is included.</p> <p>2. <u>*PRAISES OR ENCOURAGES</u>: praises or encourages student action or behavior. Jokes that release tension, but not at the expense of another individual; nodding head, or saying "um hm?" or "go on" are included.</p> <p>3. <u>*ACCEPTS OR USES IDEAS OF STUDENTS</u>: clarifying, building, or developing ideas suggested by a student. As teacher brings more of his own ideas into play, shift to Category 5.</p> <p>4. <u>*ASKS QUESTIONS</u>: asking a question about content or procedure with the intent that a student answer.</p> |
|              | DIRECT INFLUENCE   | <p>5. <u>*LECTURING</u>: giving facts or opinions about content or procedures; expressing his own ideas, asking rhetorical questions.</p> <p>6. <u>*GIVING DIRECTIONS</u>: directions, commands, or orders with which a student is expected to comply.</p> <p>7. <u>*CRITICIZING OR JUSTIFYING AUTHORITY</u>: statements intended to change student behavior from nonacceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.</p>                                                                                                                                                                                                                                                    |
| STUDENT TALK |                    | <p>8. <u>*STUDENT TALK - RESPONSE</u>: talk by students in response to teacher. Teacher initiates the contact or solicits student statement.</p> <p>9. <u>*STUDENT TALK - INITIATION</u>: talk by students, which they initiate. Expressing his own ideas; initiating a new topic; freedom to develop opinions and a line of thought, like asking thoughtful questions; going beyond the existing structure.</p>                                                                                                                                                                                                                                                                                                                                              |
|              |                    | <p>10. <u>*SILENCE OR CONFUSION</u>: pauses, short periods of silence, and periods of confusion in which communication cannot be understood by the observer.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

\*There is NO scale implied by these numbers. Each number is classificatory; it designates a particular kind of communication event. To write these numbers down during observation is to enumerate--not to judge a position on a scale.

Figure 2

Flanders' System of Interaction Analysis



2.1.2.2 Direct (D) teacher behavior consists "of stating the teacher's own opinion or ideas, directing the pupil's action, criticizing his behavior, or justifying the teacher's authority or use of that authority."<sup>26</sup>

2.1.2.3 I/D ratio - the ratio of indirect teacher behavior to direct teacher behavior.

2.1.3 Event - the shortest possible act that a trained observer can identify and record.

2.1.4 Pattern - a short chain of events that can be identified, occurs frequently enough to be of interest, and can be given a label since this often facilitates thinking.<sup>27</sup>

3. In-Service program - a program designed to serve the needs and purposes of individual teachers with respect to some aspect of the learning process.<sup>28</sup>

## DESIGN

The sample consists of ten French teachers using Voix et Images de France as the method of instruction in semesterized high schools at the grades 10 and 11 levels (French 11 and 21 respectively) in a large urban school system. Teachers in the sample were volunteers. All

---

<sup>26</sup>Ibid.

<sup>27</sup>Flanders, Analyzing Teaching Behavior, pp. 34.

<sup>28</sup>J. R. Childress, "In-service Education of Teachers," Encyclopedia of Educational Research, ed. R. L. Ebel (London: Macmillan Co., 1969), p. 645.



teachers of VIF in semesterized high schools teaching the aforementioned levels were potential participants.

The ten teachers were paired on the basis of training and experience. (See Appendix B). One of each pair was assigned to the experimental group and the other to the control group.

The Flanders' System of Interaction Analysis was used as the instrument both for the training sessions and for the observations.

The treatment for the experimental group consisted of four weekly three-hour training sessions for a total of twelve hours of instruction. Included in these training sessions were the theory of interaction analysis, coding practice, the analysis and interpretation of matrices, and the application of IA to the teaching of VIF. All materials used pertained specifically to VIF and the five steps of transposition. Each session involved the active participation of each teacher in the above activities. In order to provide the teachers with feedback, each was asked to bring a weekly fifteen minute tape of his teaching with the class used in the experiment. The control group received no training of any kind.

In order to determine the efficacy of the training sessions, all ten teachers were observed on two consecutive half-hour teaching periods before the training began and again at the conclusion of the training program. Observations were carried out by two competent French teachers who have taught VIF. Reliability was determined using Scott's Coefficient and a level of 0.85 or better was maintained





as suggested by Flanders.<sup>29</sup>

A six week follow-up was conducted on the experimental teachers in order to determine whether or not the changes measured at the conclusion of the training program were still in effect. The observations were conducted in an identical manner to the first two sets of observations.

The data were tabulated into matrices by means of the TEST 13 computer program<sup>30</sup> and the following statistical procedures were used: Chi-square for the comparison of proportions of the matrix for the two groups before and after the experiment, and the Fisher z for the comparison of selected ratios of the two groups before and after the experiment.

#### DELIMITATIONS

The following delimitations have been imposed on this study:

1. Only teachers of French are involved.
2. The setting is limited to high schools which are semes-  
terized.
3. Only the fourth and fifth years (grades 10 and 11) of the  
VIF program are included. These two levels were chosen because the

---

<sup>29</sup>Flanders, Interaction Analysis in the Classroom, p. 50.

<sup>30</sup>D. Burnett, D. Flathman, and M. Westrom, TEST 13: Flanders Interaction Analysis, Division of Educational Research Services, University of Alberta, 1971.



method of instruction for both levels is essentially the same. Also by grade 10, the minimum lesson completed is lesson 13. Therefore, the students have acquired some facility in the use of the French language such that real communication can take place.

4. Only the transpositional phase of the VIF program is analyzed as it is at that point that the greatest amount of verbal interaction between the teacher and the students occurs.

5. The duration of the training program is one month as this period of time gives the experimental teachers a chance to practice the theory learned.

#### LIMITATIONS

The following limitations are acknowledged:

1. The presence of an observer in the classroom may have caused the teacher to interact with the students in an atypical manner.

2. The sample consists of only ten teachers: five in the experimental group and five in the control group. As the study is exploratory in nature it may not allow generalizations to be made. The sample is small because there is only one person helping the researcher with the data collection.

3. The voluntary nature of the study has perhaps eliminated "typical teachers" in that only superior VIF teachers may be involved. Consequently, any generalizations regarding typical VIF behavior will have to be cautiously set forth. The nature and size of the sample will require caution in interpreting what may be idiosyncratic behavior.



## HYPOTHESES

The hypotheses are divided into three major groups: inter-group correlation, group behavior modification, and individual behavior modification.

The following null hypotheses are tested. It is hypothesized that:

1. There is no significant difference between the experimental group and the control group with respect to pre-treatment behavior on the following indices:

- 1.1 I/D ratio
- 1.2 revised i/d ratio
- 1.3 i/d (ratio) row 8
- 1.4 i/d (ratio) rows 8 and 9
- 1.5 extended i/d (ratio)
- 1.6 extended indirect influence
- 1.7 extended direct influence
- 1.8 vicious circle
- 1.9 3-3 cell
- 1.10 9-9 cell
- 1.11 teacher talk
- 1.12 student talk

2. There is no significant difference between the experimental group and the control group with respect to post-treatment behavior on the following indices:

- 2.1 to 2.12 as per hypothesis 1.

3. There is no significant difference between the pre- and



post-treatment behavior of the control group on the following indices:

3.1 to 3.12 as per hypothesis 1.

4. There is no significant difference between the pre- and post-treatment behavior of the experimental group on the following indices:

4.1 to 4.12 as per hypothesis 1.

5. There is no significant difference between the post- and delayed post-treatment behavior of the experimental group on the following indices:

5.1 to 5.12 as per hypothesis 1.

6. There is no significant difference between the pre- and post-treatment behavior of each individual teacher in the control group on the following indices:

6.1 to 6.12 as per hypothesis 1.

7. There is no significant difference between pre- and post-treatment behavior of each teacher in the experimental group on the following indices:

7.1 to 7.12 as per hypothesis 1.

8. There is no significant difference between the post- and delayed post-treatment behavior of each teacher in the experimental group on the following indices:

8.1 to 8.12 as per hypothesis 1.

## OVERVIEW

This chapter has introduced the problem and has provided a





rationale for the need for the study as well as defining its confines. The second chapter will relate the major findings of relevant research studies which are pertinent to the present study. The third chapter will present the design of the study, and the fourth chapter will present the treatment. The fifth chapter will deal with the analysis of the data and the interpretation of their results. In the final chapter will be presented the summary, conclusions, and implications of the study.



## CHAPTER II

### REVIEW OF RELATED RESEARCH

Numerous research studies have been carried out in interaction analysis using Flanders' System of Interaction Analysis, primarily in the fields of attitude change and pupil achievement. In comparison, relatively little has been documented in the area of in-service training and its effect on teacher verbal behavior.

The first section of this chapter will review those studies in the area of in-service training in interaction analysis and its effects on teacher verbal behavior which are relevant to the present study. The second section will consider some of the findings of pre-service training studies which correlate the findings of those in the first section.

### IN-SERVICE RESEARCH

In 1960, Flanders<sup>1</sup> conducted a research project in which junior high school teachers in the Minneapolis area were trained to observe

---

<sup>1</sup>The research on this project is reported in the following articles: N. A. Flanders, "Teacher Behavior and In-Service Programs," Educational Leadership, 21 (October 1963), pp. 27-29; N. A. Flanders, "Using Interaction Analysis in the In-Service Training of Teachers," Journal of Experimental Education, 30 (June, 1962), pp. 313-316; T. R. Storlie, "Applications of Interaction Analysis to the In-Service Training of Teachers," Interaction Analysis: Theory, Research, and Application, eds. E. J. Amidon and J. B. Hough (Reading: Addison-Wesley Publishing Co., 1967), pp. 262-70.



classroom interaction with a set of categories emphasizing different patterns of teacher influence. Fifty-one junior high school teachers participated in two different types of in-service training programs, each lasting nine weeks in the middle of the academic year. The purpose of the training was to increase the flexibility of teacher influence and to increase the use of those teacher behaviors which support pupil participation in the classroom learning activities. Emphasis was given to principles of teacher influence which were involved when a teacher purposely increased or decreased the freedom of pupil participation.

Each teacher practiced observation, recording of verbal statements, tabulating events into a matrix, and interpreting matrices in terms of teacher influence patterns. The training lasted for thirty hours. Each teacher was observed for approximately six hours before and again after the training to assess the influence of the training in his regular classes.

Control was created by testing certain compatibility hypotheses. The two training programs were different because of the role taken by the training instructor who was direct in one group and indirect in the other. It was hypothesized that a teacher would gain most from an in-service training program when his own style of teaching before the training was compatible with that used by the instructor.

The training consisted of opportunities in which the teachers could secure feedback information about their own spontaneous behavior while teaching. These opportunities occurred during a three week application period in the middle of the program (preceded by four weeks



of basic concept training, and followed by two weeks for the evaluation of the course) at which time a consultant was available to work with the teachers upon request. The question was whether a teacher was acting in a fashion that was consistent with his intentions.

An effort was also made to measure the attitudes of the pupils toward their teacher and their schoolwork by the Minnesota Student Attitude Inventory before, during, and after the training since earlier research had shown that such attitude measures were correlated with patterns of teacher influence and content achievement. The question as to whether changes in teacher behavior actually created more effective classroom learning rested on changes measured in pupil attitudes, which, in this instance were not significant.

The study showed that consistency between a teacher's own preferred teaching style and the methods used in the training program influenced the progress made by a teacher in training. It also showed that those teachers who were the most active in the training did make changes in their classroom behavior in a direction consistent with the objectives of the program. For those teachers who were in the class where the instructor's influence pattern was not consistent with their own it was found that the program in which the instructor used an indirect approach was shown to be more effective with most teachers than that in which the instructor used a direct approach ( $p = 0.001$ ).

The Flanders study is important to the present study because of the result indicating that instructor approach will affect the behavior of the teachers. Also important are the aspects of actual





classroom application of interaction analysis to classroom teaching and the feedback furnished the teacher about the effect of his behavior upon the students. The present study incorporated both indirect instructor teaching influence and feedback to the teacher.

Hill's study<sup>2</sup> had two purposes: to investigate the effects on verbal teaching behavior of instruction in interaction analysis as an in-service education activity, and to examine the effects of two variables of training technique--training time and mode of feedback about teaching--on change in verbal teaching behavior.

An in-service training program was conducted for thirty-five teachers of various subjects<sup>3</sup> from three elementary and two secondary schools. Each teacher was assigned to one of three training times (6, 8 or 10 hours) and was also assigned to one of two modes of receiving feedback from his teaching (tabulating tape recordings of his own teaching or conferring with the observer who had recorded his teaching). All teachers in one building were assigned to the same training time and mode of feedback. Except for these two variables, all teachers received the same instruction in the use of Flanders' system. The investigator made pre-, post-, and delayed post-observations of 120 minutes on each occasion using the FSIA as the observational tool.

---

<sup>2</sup>W. M. Hill, "The Effects on Verbal Teaching Behavior of Learning Interaction Analysis as an In-Service Activity," unpublished doctoral dissertation, Ohio State University, 1966.

<sup>3</sup>Included were elementary subjects and secondary social studies, science, mathematics, reading, English, and special education.



From pre- to post-observation, at the 0.05 level of confidence, increases in teacher acceptance of student ideas and in the revised indirect/direct ratio of teacher talk were recorded. Six significant changes ( $p \leq 0.05$ ) in verbal teaching behavior from the pre- to delayed post-observation were recorded: decreases in giving praise, questioning, giving direction, giving reproof, and the indirect/direct ratio of teacher talk, and an increase in lecturing. The researcher attributed these results to the variety of activity which occurred from one observation to another as there was no control imposed on the classroom activities to be observed. He concluded, however, on the basis of the empirical findings of the study and the responses given by the teachers on a questionnaire administered at the conclusion of the training, that interaction analysis proved to be an effective in-service activity, that the ten hour period of instruction was somewhat superior to the shorter periods, and that mode of feedback should be determined by individual preference.

Hill's study is important to the present study as it demonstrated a necessity to control the type of activity the classes were involved in during the observation periods. The contribution of a two-month delayed post-observation to the study was also incorporated into the present study. Hill's study also demonstrated that a shorter period of training time can effect verbal teaching behavior and his use of feedback again demonstrated how important it is to the success of a training program. It is notable also that feedback mode should be an individual preference.

During the summer of 1967, a graduate course was offered to



foreign language teachers at Temple University by Moskowitz.<sup>4</sup> The class, which consisted of twenty-eight teachers of French, German, Latin, Russian, Spanish, and English as a second language, met for three weeks from three to four hours daily. The course consisted of two parts: during half the time the participants were instructed in the use of observational systems for analyzing interaction in the foreign language classroom, and during the other half they were exposed to multisensory foreign language curriculum programs as well as foreign language methodology. The observation systems studied consisted of FSIA, the FLint system, an embellishment of the Flanders system designed to analyze foreign language teaching developed by Moskowitz, and the IDEI (indirect direct encouraging inhibiting) system of nonverbal communication developed by Charles Galloway.

The main purpose of training the teachers in observational systems was to increase their sensitivity to their own classroom behavior and its effects and influence on students. Practice in developing new behaviors and analyzing their effects was a key element in the training.

Moskowitz developed a set of specially designed materials for training foreign language teachers in the Flanders system which was field-tested on this group.<sup>5</sup>

---

<sup>4</sup>G. Moskowitz, "The Effects of Training Foreign Language Teachers in Interaction Analysis," Foreign Language Annals, 1 (March 1968), pp. 230-35.

<sup>5</sup>G. Moskowitz, The Foreign Language Teacher Interacts (Minneapolis: Assoc. for Productive Teaching, 1968).



Each teacher brought a fifteen minute audiotape of his own teaching made prior to the course. The teachers were then asked to analyze these tapes using the Flanders system and to decide for themselves what changes they would like to make in the teaching patterns they used.

Each teacher also prepared a ten minute lesson in which he planned to control his behavior by increasing and/or decreasing behavior patterns of his own choosing. The teacher then microtaught this lesson, using live pupils, which was video-taped and played back for all to observe. These lessons were then coded by two staff members. One used the FSIA and the other used the FLint system. Additional feedback was given by the pupils, who filled out a questionnaire about each lesson they were taught. The teachers then built two matrices with the two sets of tallies and compared their actual matrix with the preplanned matrix and also with the lesson on audiotape which they had previously analyzed. Emphasis was placed on what had happened and why, rather than solely on whether or not the model had been carried out successfully. Using interaction analysis systems to analyze the micro-teaching seemed to turn the experience into an objective analysis rather than a subjective one. Each teacher was his own critic and judge.

Five weeks after the new school year started, a questionnaire was sent to the participants to find out whether the content of the course had influenced their actual classroom teaching. Twenty-six (93%) of the forms were returned. On five of the items the teachers were to circle their responses on a 1-7 point scale. The mean scores





for all of these items were in the vicinity of the area labelled "a great deal". It appears that the teachers felt that studying observational systems had greatly influenced their perceptiveness and their interactions.

The teachers were then asked to check the responses which described their foreign language teaching during the fall term as compared with that of the last term they had taught. The responses indicated that the teachers perceived themselves as having made a number of behavioral changes related to concepts in the systems which were studied. These changes appeared to be in the desired direction being more in keeping with the goals of language teaching. No statistical level of significance is reported for these results, however.

The data and the testimonials from the "back home" report seemed to indicate that learning interaction systems had decided influence on the attitudes of these teachers as well as application to their teaching. If actual observational data had been included, these data could have substantiated the teachers' perceptions about their teaching.

Moskowitz' study has contributed significantly to the present study. Her use of materials actually tied to the second languages\* taught impressed upon this researcher the need to do the same. Her use of a fifteen minute tape of teacher behavior was incorporated into the

---

\*As French is considered a second language in Canada, the term is used in the present study in preference to foreign language, a more commonly-used term in the United States.



present study as a means to provide the teachers with feedback about their progress.

Each of these three studies has contributed to the design of the present study. Flanders' results provided a framework whereby the influence of the instructor upon the participating teachers would be such that the teachers were free to choose whether or not they wished to change their behavior according to the objectives of the training program, and how they wished to go about doing it. The importance of feedback was demonstrated by all three studies. The method of providing it to the teachers would be similar to that used by Moskowitz. Hill's study reiterated the importance of personal preference and freedom of choice in feedback method. His results demonstrated the necessity to control the activities of classes during observation. Hill's use of a post-treatment observation period is also relevant to the present study as this was incorporated into the design. His results demonstrated also that six to ten hours would provide an adequate basis for producing behavioral change in the teachers.

Other in-service research studies which used interaction analysis as the training tool and which reported positive results in behavior change are those reported by Bowers and Soar,<sup>6</sup> Raack,<sup>7</sup>

---

<sup>6</sup>N. D. Bowers and R. S. Soar, "Evaluation of Laboratory Human Relations Training for Classroom Teachers," Studies of Human Relations in the Teaching-Learning Process, V Final Report, Contract No. 8143 with the Cooperative Research Branch, U. S. Office of Education, Department of Health, Education, and Welfare, 1961.

<sup>7</sup>M. L. Raack, "The Effects of an In-Service Education Program on Teacher Verbal Behavior," unpublished doctoral dissertation, University of California, 1967.



Parrish,<sup>8</sup> Bond,<sup>9</sup> Briscoe,<sup>10</sup> and Gill.<sup>11</sup> Although their results are essentially the same, each used different numbers and kinds of teachers, varying numbers of actual training hours, and varying numbers of hours of observation. In general, the studies demonstrate that in-service training in interaction analysis increased the teachers' use of indirect statements. Three of the studies also demonstrated that students of teachers trained in interaction analysis talked more.

#### PRE-SERVICE RESEARCH

A study of the effect on foreign language majors of pre-service training in interaction analysis was conducted by Moskowitz<sup>12</sup> in the

---

<sup>8</sup>H. W. Parrish, "A Study of the Effects of In-Service Training in Interaction Analysis on the Verbal Behavior of Experienced Teachers," unpublished doctoral dissertation, University of Oregon, 1968.

<sup>9</sup>P. Y. Bond, "The Effects of Feedback on Teachers' Verbal Behavior and Attitudes Toward In-Service Education," unpublished doctoral dissertation, North Texas State University, 1969.

<sup>10</sup>I. C. Briscoe, "A Study of the Effects of In-Service Training in Interaction Analysis on Teacher Attitudes, Teacher-Pupil Interaction Patterns, and Pupil Achievement in Reading," unpublished doctoral dissertation, University of Georgia, 1970.

<sup>11</sup>N. C. Gill, "The Effect of In-Service Training in Discussion Skills on Classroom Interaction Patterns," unpublished doctoral dissertation, University of Minnesota, 1970.

<sup>12</sup>G. M. Moskowitz, "The Effects of Training Foreign Language Teachers in Interaction Analysis," Foreign Language Annals, 1 (March, 1968), pp. 222-29.



spring term of 1966 at Temple University. The fourteen foreign language majors were placed in a course along with student teachers from other academic areas to learn Flanders' system. The student teachers attended the lecture for this course two hours a week for fifteen weeks. As well, while the other student teachers had a seminar, the foreign language majors met for two hours a week in a seminar of their own in which the concepts of interaction analysis were related to the teaching of foreign languages.

Instruments administered two weeks after the student teachers had begun to teach (the fourth week of student teaching) and again eight weeks later included the administration of the Teaching Situation Reaction Test to the student teachers, the Foreign Language Attitude Questionnaire to the pupils being taught, the Student Teachers' Attitude Questionnaire, and a parallel form, the Cooperating Teachers' Attitude Questionnaire. The last three instruments were devised by the researcher.

Each student teacher tape recorded four class periods: a grammar lesson and a conversation lesson which they taught at the beginning of the semester and again after their training in the FSIA.

The results reported by Moskowitz indicated that the foreign language student teachers as measured by the Teaching Situation Reaction Test became significantly more positive in their attitudes toward teaching after the training. The pupils recorded no significant difference on the total score or on any of the three subscales of the Foreign Language Attitude Questionnaire. The attitudes of the student teachers toward their cooperating teachers became more negative,





although not significantly as measured by the Student Teachers' Attitude Questionnaire. There was no significant difference between the cooperating teachers' attitudes toward the student teachers on either occasion as measured by the Cooperating Teachers Attitude Questionnaire.

The training in Flanders' system resulted in significant differences at the 0.05 level or beyond in the following areas:

1. Student teachers in both grammar and conversation lessons used significantly:
  - a. More indirect behaviors in motivating and controlling their classes. (Revised i/d ratio)
  - b. More extended indirect influence.
  - c. More extended indirect behaviors in proportion to extended direct behaviors. (Extended i/d ratio)
  - d. More extended acceptance of pupils' ideas.
2. Student teachers in grammar lessons used significantly:
  - a. Fewer directions.
  - b. Fewer extended directions.
  - c. More broad questions, which elicited original pupil responses, in proportion to narrow questions which elicited predictable pupil responses. (4-9 cell/4-8 cell)
3. Student teachers in conversation lessons used significantly:
  - a. More indirect behaviors in their overall interaction patterns.
  - b. More extended praise.
- . . .
5. The pupils in the classes taught by the student teachers also revealed certain changes. . . . After the student teachers were trained in interaction analysis, the pupils in both types of lessons:
  - a. Initiated their own ideas more, immediately after the student teacher presented information or lectured. (5-9 cell)
6. Pupils in conversation lessons:
  - a. Gave fewer narrow, predictable responses.
  - b. Presented more of their own ideas and initiated the conversation more.
  - c. Talked for greater lengths of time when they expressed their own ideas.<sup>13</sup>

---

<sup>13</sup>Ibid., p. 226.



The results of this study appear to be similar to those obtained from training teachers of the other academic disciplines; both their attitudes toward teaching and the behavior patterns of the foreign language student teachers became more positive and more indirect after training in the Flanders' system.<sup>14</sup>

During the following academic year, a related study was conducted over the course of two semesters with results consistent with those of the first study.<sup>15</sup> In the second study, an experimental group of thirteen foreign language student teachers met weekly for two hours. The class consisted of activities based on practicing and experimenting with different behaviors and analyzing their effects - buzz groups, role playing, skill sessions, and concepts from sensitivity training. The control group of nineteen foreign language student teachers had a course in the foundations of education in lieu of the interaction training.

The great contributions of the Moskowitz' studies lie in the fact that to this researcher's knowledge, hers are the first studies on training in interaction analysis in both pre- and in-service

---

<sup>14</sup>Ibid., p. 229.

<sup>15</sup>G. Moskowitz, "A Comparison of Foreign Language Student Teachers Trained and Not Trained in Interaction Analysis," American Foreign Language Teacher, (October, 1970), pp. 10-15.



training with foreign language teachers. Other descriptive studies<sup>16</sup> of the interaction in a foreign language classroom have been undertaken, but not with the intent of modifying teacher behavior.

The results reported by Moskowitz concur with other major pre-training interaction analysis studies: Hough and Amidon,<sup>17</sup> Zahn,<sup>18</sup> Kirk,<sup>19</sup> Furst,<sup>20</sup> Hough and Ober,<sup>21</sup> and Lohman, Ober, and Hough.<sup>22</sup> These

---

<sup>16</sup>Included are: L. J. Maurice, "A Method of Procedure Analysis in the Teaching of French as a Second Language," unpublished master's thesis, University of Manitoba, 1968.; M. Gagnon, "Relationship Between Systematic Observation of Verbal Interaction and Pupil Success in Foreign Language Classes," unpublished doctoral dissertation, Stanford University, 1969.; E. C. Wragg, "Interaction Analysis in the Foreign Language Classroom," Modern Language Journal, 54 (February, 1970), pp. 116-20.; E. O. Nearhoof, "An Examination of Teacher-Pupil Interaction in Third Year French Classes," unpublished doctoral dissertation, Iowa State University, 1971.

<sup>17</sup>J. B. Hough and E. J. Amidon, "Behavioral Change in Student Teachers," Interaction Analysis: Theory, Research, and Application, eds. E. J. Amidon and J. B. Hough (Reading: Addison-Wesley Publishing Co., 1967), pp. 307-14.

<sup>18</sup>R. D. Zahn, "The Use of Interaction Analysis in Supervising Student Teachers," loc. cit., pp. 295-98.

<sup>19</sup>J. Kirk, "Elementary School Student Teachers and Interaction Analysis," loc. cit., pp. 299-306.

<sup>20</sup>N. Furst, "The Effect of Training in Interaction Analysis on the Behavior of Student Teachers in Secondary Schools," loc. cit., pp. 315-28.

<sup>21</sup>J. B. Hough and R. Ober, "The Effect of Training in Interaction Analysis on the Verbal Teaching Behavior of Pre-Service Teachers," loc. cit., pp. 329-45.

<sup>22</sup>E. Lohman, R. Ober, and J. B. Hough, "A Study of the Effect of Pre-Service Training in Interaction Analysis on the Verbal Behavior of Student Teachers," loc. cit., pp. 346-59.



studies, among others, have all demonstrated the use of interaction analysis in modifying teaching behavior in the stated desired direction.

As a result of the positive results indicated by the use of interaction analysis in in-service training and the evident gap in second language studies in this area, the present researcher has attempted to synthesize the two by training teachers of the Voix et Images de France method of French instruction in the use of interaction analysis as an in-service project in order to determine whether or not their verbal teaching behavior can be modified.





### CHAPTER III

#### DESIGN OF THE STUDY

The first chapter introduced the problem and provided a rationale for the need for the study. The second chapter presented the results of research studies relevant to the present study. This chapter includes a description of Voix et Images de France, the sample, the instrument, the method of observer training and estimating reliability, the procedure used for the collection of the data, the descriptive indices used, and the statistical analyses used to treat the data. This chapter presents the theoretical rationale for the study.

#### VOIX ET IMAGES DE FRANCE

Voix et Images de France, an audio-visual method of French instruction was developed gradually through several years of classroom experimentation by the Centre de Recherche et d'Etude pour la Diffusion du Français.<sup>1</sup>

It was adopted for use by the Edmonton Public School Board in 1963 to be taught in one of two ways: as a six year program starting in grade 7 and carrying on through grade 12, and as a three year program starting in grade 10. This study is concerned with the first sequence.

---

<sup>1</sup>C. Renard and C. H. Heinle, Implementing Voix et Images de France (Part I) in American Schools and Colleges (Philadelphia: Chilton Books, 1969), pp. xi-xii.



In the audio-visual method of language instruction, language is considered to be a set of abstract psychological principles; an acoustic-visual ensemble where the situation cannot be separated from the elements that constitute its linguistic expression.<sup>2</sup> Dialogue is considered to be the constant link between context and expression and the situational context is a constant semantic framework wherein grammatical structure is manipulated. In the audio-visual method, this structural manipulation takes the form of a question and answer exchange<sup>3</sup> which stimulates actual communication and requires language to perform its social function.

Each of the thirty-two units of VIF consists of a "sketch" which presents an everyday situation and a "grammatical mechanism" which concentrates on and systematizes the points of grammatical structure presented in the sketch. Both parts of the unit are taught in the same manner according to the following procedure:<sup>4</sup>

---

<sup>2</sup> Ibid., pp. 11-14.

<sup>3</sup> For example:  
 Professeur: Qu'est-ce que c'est?  
 Elève: C'est un camion.  
 Professeur: C'est quel camion?  
 Elève: C'est le camion du boucher.  
 . . .

<sup>4</sup> Ibid., pp. 35-56.



| Phase            | Objective     | Material(s)        | Process                                                                                                                                                                                   |
|------------------|---------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Presentation  | perception    | filmstrip and tape | Teacher simultaneously presents the filmstrip and tape of segment.                                                                                                                        |
| 2. Explanation   | comprehension | filmstrip and tape | By asking a series of questions, the teacher progressively elicits from the students the meaning of the sound groups of the dialogue.                                                     |
| 3. Repetition    | assimilation  | filmstrip and tape | Each student individually reproduces each semantic group in a native-like way, referring to the tape as the constant model.                                                               |
| 4. Transposition | transfer      | filmstrip          | The students manipulate the variable elements of the structural units and transpose the acquisitions from the context in which they have been assimilated to a variety of new situations. |

Figure 3

The Four Phases of the Audio-Visual Method



The final phase, transposition, consists of four inter-related steps. These are:<sup>5</sup>

- T1 recall of semantic groups in the presence of the corresponding pictures, linking questions with answers, without the tape recorder.
  - a) recall of complete sentences
  - b) roles assumed and dialogues "behaved"
- T2 questions and description (with pictures)
  - a) manipulation of the variable elements of structures
  - b) oral description of selected pictures
- T3 questions and narration (without pictures)
  - a) questions answered on the content of the "dialogue"
  - b) narration of the story (résumé)
- T4 transfer to the students' lives (without pictures)
  - a) students transpose lesson situation to their own lives by
    - 1) direct questions
    - 2) structured situations
  - b) "behaves" a new but related situation

For purposes of this study (steps T2a to T4a) of the transpositional phase have been chosen for examination as it is at this point that the greatest amount of verbal interaction between the teacher and the students occurs. Although both a distinctive procedural method<sup>6</sup> and segmentation pattern<sup>7</sup> are prescribed by the authors of the audio-visual method, few high school teachers follow this prescript precisely. The majority of the teachers participating in this study have adapted or modified the procedure for the transpositional phase. The following

---

<sup>5</sup> Ibid., p. 57.

<sup>6</sup> Ibid., pp. 58-78.

<sup>7</sup> Ibid., p. 37.





reasons were given by them in personal interviews conducted by the investigator of this study:

(1) Individual schools have different time allotments (anywhere from 40 to 90 minute periods).

(2) The use of media and grouping techniques allows for further violation of the procedure.

(3) With the threat of the final, externally-imposed examination, more emphasis is placed on the reading and writing skills than prescribed by the method.

(4) Some teachers prefer to teach in a style peculiar to themselves and therefore find that a prescribed sequence and segmentation pattern hampers their style.

Probably therefore, each teacher follows his own particular pattern of transposition. On the basis of the personal interviews it was almost impossible to limit the participating teachers to the use of one particular step of the transpositional phase as this would not necessarily represent a natural teaching procedure for them.

The observation of transposition for a thirty minute period on two consecutive days was chosen for three reasons:

(1) Normally a teacher would not do transposition for a longer period of time on any given day;

(2) The use of consecutive days would allow the teacher to develop his transposition sequence for a total duration of one hour.

(3) The two day sequence allows for teacher variation of mood and style such that the observation would represent a more typical teaching pattern. (No observations were planned for a Friday-Monday time



sequence as it was felt that the weekend would disturb an otherwise fairly consistent teaching pattern.)

Flanders has recommended that interpretations of teaching be based on no less than twenty minutes of observation of a homogeneous activity.<sup>8</sup> This study has used observations of one hour of such an activity, the transpositional phase of VIF, on which to base interpretations.

The two levels of VIF instruction, French 11 and French 21 (the fourth and fifth years of the program, respectively) were chosen because the method of instruction for both levels is essentially the same. At the French 11 level, the minimum lesson completed is Lesson 13. At this stage the students have acquired some facility in the use of the French language such that real communication can take place.

The semesterized high school was chosen as this provided each participating teacher with a new class in a new semester in which to teach. Raack<sup>9</sup> has recommended that change in behavior, if it is to occur, is more likely to do so in a new environment. If the teacher taught more than one of the chosen levels, only one (that which he preferred) was included in the experiment as Klein<sup>10</sup> found that students

---

<sup>8</sup>N. A. Flanders, "Intent, Action, and Feedback: A Preparation for Teaching," Interaction Analysis: Theory, Research, and Application, eds. E. J. Amidon and J. B. Hough (Reading: Addison-Wesley Publishing Co., 1967), p. 289.

<sup>9</sup>M. L. Raack, "The Effect of an In-Service Education Program on Teacher Verbal Behavior," (unpublished doctoral dissertation, University of California, 1967), p. 107.

<sup>10</sup>S. S. Klein, "Student Influence on Teacher Behavior," American Educational Research Journal, 8 (May, 1971), p. 407.



may exert a definite influence on the behavior of the teacher. These two precautions were taken in order to maintain a fairly constant environment for each participating teacher.

#### SAMPLE

Subsequent to receiving permission from the Research Division of the Edmonton Public School Board to conduct the study, the investigator was furnished with a list of potential teachers by the supervisor of second language instruction. Once the permission of the principals<sup>11</sup> was obtained, the department heads of the semesterized schools were contacted in order to set up one meeting at each school in order to meet the teachers.

At these meetings, the purpose of the study was explained to the extent that the teachers knew that there was no evaluation involved and that there would be a time commitment of twelve hours if they wished to take part. All ten eligible teachers who were contacted consented to participate in the study on a voluntary basis.

The ten teachers who participated in the study came from four semesterized high schools. The schools represent four diverse areas of the city. Four of the teachers came from one school, while two teachers came from each of the other three schools.

As there was a possibility of contamination if the two teachers from one school were in different groups, a pilot study was undertaken.

---

<sup>11</sup>Only one principal contacted refused to allow his teachers to take part in the study.



The purpose of the pilot was to determine whether or not superficial knowledge of the system would alter regular teacher behavior. The results of the pilot are reported in Appendix C.

The teachers were matched on the basis of the information provided by the Professional Information form (Appendix B) for teaching experience and university training.<sup>12</sup> One of the pair was randomly chosen to take part in the experiment while the other was designated as the control teacher.

Generally, the two groups were fairly balanced in terms of university training and VIF experience. The experimental group had an average of 5.0 years of university training as compared to 4.8 years for the control group. The experimental teachers had instructed VIF on the average for 4.0 years as compared to 3.4 years for the control teachers. However, the control teachers had taught French for an average of 6.6 years as compared to only 5.0 years for the experimental teachers. Total teaching experience for the control teachers was considerably higher than for the experimental teachers. The results of the comparison are reported in Table I.

Table II presents other relevant data. These data were not used in order to match the two groups. However, they shed light on the professional training and experience of the teachers. The experimental teachers had taken an average of 1.2 methods courses each and the control teachers had taken 1.6 methods courses each. The experimental

---

<sup>12</sup>L. P. Hoehn, ed., "Teaching Behaviors Improvement Program, Michigan-Ohio Regional Education Lab," Detroit, July 1969, p. 42.





TABLE I  
COMPARISON OF TRAINING AND EXPERIENCE FOR THE  
EXPERIMENTAL AND CONTROL GROUPS

| Years                     | experimental | control |
|---------------------------|--------------|---------|
| University training       | 5.0          | 4.8     |
| VIF instruction           | 4.0          | 3.4     |
| Total French instruction  | 5.0          | 6.6     |
| Total teaching experience | 5.2          | 7.8     |

TABLE II  
ADDITIONAL DESCRIPTIVE DATA FOR THE TWO GROUPS

| variable                    | experimental                                                                               | control                                                                                                                 |
|-----------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| methods course              | 1.2                                                                                        | 1.6                                                                                                                     |
| workshops for VIF           | 1.6                                                                                        | .8                                                                                                                      |
| other French methods taught | Ecouter et Parler<br>Français Vivant<br>New Junior French<br>Senior French<br>Bonjour Line | Ecouter et Parler<br>Français Vivant<br>New Junior French<br>Senior French<br>Chez les Français<br>Nos Voisins Français |
| other subjects taught       | German<br>Latin<br>social studies<br>mathematics<br>physical sciences<br>social sciences   | German<br>Latin<br>English<br>social studies<br>elementary                                                              |



teachers had each taken 1.6 VIF workshops as compared to the control teachers who had each taken 1.2 such workshops. The control teachers had taught other French methods more extensively than had the experimental teachers. The two groups were fairly balanced on the different types of other subjects they had taught. At the time of the study, all teachers taught only French.

Once the classes had begun each teacher was asked for the total number of students in the participating class. Table III presents the average totals for the two groups.

TABLE III  
AVERAGE CLASS SIZE AND SEX DISTRIBUTION OF THE  
PARTICIPATING CLASSES

| Group        | Female | Male | Total |
|--------------|--------|------|-------|
| experimental | 14.8   | 5.0  | 19.8  |
| control      | 12.2   | 9.6  | 21.8  |



As the sample is small, it was decided not to control for sex or age differences. As well, no attitude measures were administered as it was felt that the individual differences of the teachers would not allow for generalizations on the basis of entering behavior.

This study considers the results demonstrated by the teachers, both individually and as a group, in terms of behavior change over the period of time of the experiment. The sampling unit under study is that of teacher behavior and how it can be influenced by the given training program which encompasses twelve hours.

#### INSTRUMENT

Flanders System of Interaction Analysis (FSIA) was used as both the instrument of observation and the training tool for two reasons. It is easily learned, and a considerable body of research has successfully used it in past for the same two purposes. The FSIA has been called the most widely known and used classroom observation system.<sup>13</sup>

The FSIA is considered to be a most sophisticated technique for the observation of climate and unique in that it preserves a certain amount of information regarding the sequence of behavior.<sup>14</sup> The Flanders system is a one-factor system in which each behavior is coded only in terms of its frequency. The FSIA is a primarily affective one-factor

---

<sup>13</sup>A. Simon and G. Boyer, Mirrors for Behavior II Vol. A, (Philadelphia: Research for Better Schools, 1970), p. 37.

<sup>14</sup>Medley and Mitzel, op. cit., p. 271.



system.<sup>15</sup> The major advantages of this type of system is its ease of coding and the ease with which it can be modified for use by other investigators. Flanders system, like almost all category systems, was designed for use in most instructional situations.

For an observational system to be valid for measuring behavior, it must provide an accurate record of behaviors which actually occurred, scored in such a way that the scores are reliable.<sup>16</sup> In the FSIA, most of the behaviors to be recorded are those referring to the emotional climate of the classroom by coding how the teacher reacts to the students. The way the teacher responds to the students determines, to a large degree, the affective climate of the classroom.

Kerlinger has stated that the most important clue to the study of validity of behavioral observation systems would seem to be construct validity. "If the variables being measured by the observational procedures are imbedded in a theoretical framework, then certain relations should exist."<sup>17</sup> This theoretical framework is provided for the Flanders system by the research on which it is based:

When considered as a whole, the research of Anderson and his co-workers, Lippitt and Withall, provides a valid conceptual base for FSIA. Flanders' indirect-

---

<sup>15</sup>B. Rosenshine, "The Evaluation of Classroom Instruction," Review of Educational Research, 40 (No. 2, 1970), pp. 283-85.

<sup>16</sup>Medley and Mitzel, op. cit., p. 250.

<sup>17</sup>F. N. Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart, and Winston, 1964), p. 507.





direct dichotomy corresponds to Anderson's integrative-dominative dichotomy, Lippitt's democratic-authoritarian dichotomy, and Withall's learner-centered-teacher-centered dichotomy. All three studies demonstrated the importance of a leader in creating a social-emotional climate. All three studies illustrated that social-emotional climate can be objectively described.<sup>18</sup>

Further evidence of validity can be provided by the comparisons of FSIA with other observational systems. In a study<sup>19</sup> comparing FSIA with OscAr 4V, a factor analysis was performed on the seventy-five intercorrelated measures of the two systems. Ten factors describing the differences between the teachers were identified of which five were measured by both systems, three by the OscAr only, and two by the FSIA only. This indicated that there appears to be considerable overlap between the two systems. In another study<sup>20</sup> the FSIA was used as a supplementary measure in an analysis of the "evaluative ventures" identified by Smith and others. The analysis of the data indicated that measures obtained from the FSIA are related to such things as the number and length of evaluative discussions and their logical

---

<sup>18</sup>R. M. Anderson, "A Comparison of Bales' and Flanders' Systems of Interaction Analysis as Research Tools in Small Group Discussion," (unpublished doctoral dissertation, University of Alberta, 1972), pp. 71-72.

<sup>19</sup>Study by Medley and Hill (1968) as reported by G. A. Nuthall, "A Review of Some Selected Recent Studies of Classroom Interaction and Teaching Behavior," Classroom Observation, American Educational Research Association Monograph Number 6, J. J. Gallagher, G. A. Nuthall, and B. Rosenshine, 1970, pp. 11-12.

<sup>20</sup>Personal communication between Pearson, the investigator of the study, and G. A. Nuthall, op. cit., p. 12.



complexity. This suggests that the affective climate is not independent of the logical and semantic aspects of the discussion in a teacher's class.

Flanders has specified reliability of his instrument in terms of observer agreement. Scott's Reliability Coefficient is used to measure the reliability of two observers. This coefficient was chosen over Bales' adaptation of Chi-square as Flanders found it to be more appropriate. The major advantages of Scott's method are that it is unaffected by low frequencies, it can be adapted to percent figures, it can be estimated more rapidly in the field, and it is more sensitive at higher levels of reliability.<sup>21</sup>

Scott calls his coefficient "pi" which is determined by the two formulae below<sup>22</sup>

$$\pi = \frac{P_o - P_e}{100 - P_e} \quad (1)$$

where  $P_o$  is the percentage of agreement, and  $P_e$  is the percentage of agreement expected by chance, found by squaring the proportion of tallies found in each category, summing these over all categories, and multiplying by 100.

$$P_e = 100 \sum_{i=1}^k p_i^2 \quad (2)$$

---

<sup>21</sup>N. A. Flanders, Interaction Analysis in the Classroom, A Manual for Observers, (University of Michigan: School of Education, 1966), p. 13.

<sup>22</sup>Ibid.



In formula two, there are  $k$  categories and  $p_i$  is the proportion of tallies falling into each category. In formula one,  $\mathcal{H}$  can be expressed in words as the amount that two observers exceeded chance agreement divided by the amount that perfect agreement exceeds chance.<sup>23</sup>

Before Flanders' 1959-60 study, he undertook two preliminary studies, one in New Zealand and one in Minnesota, in order to determine if there were any relationships between patterns of teacher influence and the attitudes of pupils toward their teachers and schoolwork. The same results were found in both the Minnesota and New Zealand studies in spite of differences in teaching style and pupil expectations.<sup>24</sup> This would suggest that the behaviors which the system is measuring are valid and can be reliably observed in two different situations.

The Flanders instrument has fair reliability measures. Flanders has correlated scores based on observations made by different observers at different times, scores based on observations by different observers at the same time, and scores based on observations made by the same observer at different times. The consistency of these three measures, respectively, give indications of the objectivity of the technique, the consistency of behavior from time to time, and the accuracy of the measurements.<sup>25</sup>

---

<sup>23</sup> Ibid.

<sup>24</sup> N. A. Flanders, Teacher Influence, Pupil Attitudes and Achievement, (U. S. Department of Health, Education, and Welfare) 1965, p. 64.

<sup>25</sup> Medley and Mitzel, op. cit., pp. 253-54.



As a result of the established validity and reliability of this system as well as its relative simplicity and the wealth of research knowledge found by its use, the Flanders system was chosen as the instrument for this study.

#### OBSERVER TRAINING AND RELIABILITY

The two observers trained for this study were the investigator and a fellow graduate student. Both had previously taught VIF and consequently were knowledgeable in its use.

Once the investigator had thoroughly learned the theory of interaction analysis, she began to train herself to code verbal behavior by using Flanders typescripts<sup>26</sup> and the Amidon and Amidon materials.<sup>27</sup> After approximately twelve hours of coding practice and attainment of a reliability coefficient of 0.85 or better when compared to the commercial materials<sup>28</sup> the investigator felt confident enough to start training her partner.<sup>29</sup>

---

<sup>26</sup>N. A. Flanders, Analyzing Teaching Behavior, (Reading: Addison-Wesley, 1970), pp. 56-57.

<sup>27</sup>E. J. Amidon and P. Amidon, Interaction Analysis Training Kit (Level I) (Minneapolis: Association for Productive Teaching, 1967). This includes a training manual and tape.

<sup>28</sup>Flanders, Interaction Analysis in the Classroom, p. 17. "A Scott coefficient of 0.85 or higher is a reasonable level of performance."

<sup>29</sup>Another observer also was to take part in the study. However, due to unforeseen circumstances, he was unable to continue. Therefore, the investigator herself served as an observer.





The second observer was given a list of the Flanders categories as well as an elaboration of each and ground rules for category discrimination.<sup>30</sup> He was asked to memorize these. The initial meeting was spent on a general introduction to interaction analysis, its theory and application.

The initial coding practice began using the aforementioned typescripts which concentrated on mathematics lessons and an elementary group activity. This allowed the two to discuss any discrepancies of coding and provided a constant model. The Amidon materials were then used to practice "live" observation. It was found to be very helpful to have one person orally call out the sequence of numbers while the other followed the key in the manual. This allowed immediate discussion and correction of errors.

Once this had been done so that errors were no more than a few per exercise, coding onto IBM answer sheets began. When all the exercises in the training kit had been completed so that the agreement between the two observers and the key was approximately 0.85 the two moved on to coding French materials, specifically Voix et Images de France. The choice was a videotape which dealt exclusively with the four phases of VIF.<sup>31</sup>

This videotape proved to be very useful not only because it is a more representative form of actual classroom behavior than an

---

<sup>30</sup>Flanders, Analyzing Teaching Behavior, pp. 40-53.

<sup>31</sup>M. J. Monod, "The Four Phases of Voix et Images de France," B & W,  $\frac{1}{2}$  inch, 42 minutes, Department of Secondary Education, University of Alberta, 1969.



audiotape, but also because it is a representation of that aspect of classroom behavior with which this study is concerned. The two observers found it easier to agree on the behavior on the videotape than had been found on the audiotaped materials. As well, two one hour audiotapes of VIF transposition at the University level were used for practice.

After approximately sixteen to eighteen hours of practice,<sup>32</sup> when the observers had consistently maintained an inter-observer reliability of 0.90 or better, the two went into a university VIF class where the class was engaged in transposition and coded live interaction for thirty minutes. This class was audiotaped as well so that observer discrepancy could be discussed later. Table IV presents the results of this reliability check using the Scott method.

The observers then observed the teachers in the study. During the two week period the two met almost daily to discuss behavior patterns not previously encountered. This served to maintain reliability between the two observers.

During the treatment period the observers met for weekly discussions and took bi-monthly reliability checks<sup>33</sup> to maintain an

---

<sup>32</sup>Flanders, Interaction Analysis in the Classroom, p. 20. Flanders recommends a minimum of twelve hours of observer training for a research project.

<sup>33</sup>A procedure suggested by Flanders, ibid., p. 17.



TABLE IV  
OBSERVER RELIABILITY

| Category | Observer<br>A tallies | Observer<br>B tallies | % A   | % B   | % Difference | (Ave. %) <sup>2</sup> |
|----------|-----------------------|-----------------------|-------|-------|--------------|-----------------------|
| 1        | 0                     | 0                     | 0.0   | 0.0   | 0.0          | 0.00                  |
| 2        | 95                    | 87                    | 15.8  | 14.5  | 1.3          | 2.30                  |
| 3        | 9                     | 7                     | 1.5   | 1.2   | 0.3          | 0.02                  |
| 4        | 110                   | 115                   | 18.4  | 19.2  | 0.8          | 3.53                  |
| 5        | 31                    | 29                    | 5.2   | 4.8   | 0.4          | 0.25                  |
| 6        | 37                    | 36                    | 6.2   | 6.0   | 0.2          | 0.37                  |
| 7        | 21                    | 24                    | 3.5   | 4.0   | 0.5          | 0.14                  |
| 8        | 209                   | 220                   | 34.8  | 36.7  | 1.9          | 12.78                 |
| 9        | 65                    | 59                    | 10.8  | 9.8   | 1.0          | 1.06                  |
| 10       | 23                    | 23                    | 3.8   | 3.8   | 0.0          | 0.14                  |
| Totals   | 600                   | 600                   | 100.0 | 100.0 | 6.4          | 20.59                 |

$$\mathcal{H} = \frac{P_o - P_e}{100 - P_e} = \frac{(100.0 - 6.4) - 20.6}{100.0 - 20.6} = 0.92$$



acceptable level of reliability. These took the form of ten minute videotape portions of VIF instruction. The two observers coded for ten minutes and then took a break for discussion. Upon its conclusion, the same portion was recoded. This allowed for a check on both inter- and intra-observer reliability. The results were tabulated in the same manner as those of Table IV and are presented in Table V.

TABLE V  
OBSERVER RELIABILITY

| Date    | Observer A<br>Intra | Observer B<br>Intra | Inter-Observer |
|---------|---------------------|---------------------|----------------|
| Jan. 31 | 0.97                | 0.94                | 0.92<br>.94    |
| Feb. 14 | .98                 | .92                 | .92<br>.92     |
| Feb. 29 | .97                 | .95                 | .92<br>.92     |
| Mar. 17 | .95                 | .93                 | .90<br>.92     |





When the post-treatment observations began, the observers again met almost daily to discuss unusual teaching patterns exhibited by the teachers.

At the conclusion of the post-treatment observations, the investigator, who became the sole observer for the delayed post-treatment observations, maintained weekly reliability checks. On these occasions, the fifteen minute audiotapes provided by the experimental teachers were recoded and reliabilities checked by comparing the results tabulated the first time with those tabulated on the occasion of the check. On each of these weekly checks, a random selection of a fifteen minute tape was made. The average reliability over the six week period by this method was 0.97.

#### DATA COLLECTION

Once the teachers had been selected and randomly assigned on the basis of matched training and experience to either the experimental or control group, observations began. Each observer was responsible for five teachers which he then coded on all occasions with the exception of the delayed post-treatment observation.

Each teacher filled out a form indicating which days he would be doing transposition that could then be observed. The pre-treatment observation period covered a period of two weeks. Each teacher was observed on two consecutive thirty-minute periods. The Friday-Monday sequence was not observed as it was felt that the weekend would exert a disruptive influence on an otherwise normal teaching pattern



established in a consecutive two-day sequence.

During the two week pre-treatment observation period the observers met almost daily to discuss unusual teaching patterns. At the conclusion of the observations, the IBM general purpose answer sheets which were used for coding were run through the IBM optical scanner and turned into data cards which were then analyzed by the computer. This coding procedure<sup>34</sup> has previously been employed at this university.<sup>35</sup> At the conclusion of the treatment the same observation procedure was followed for two weeks. Each observer again observed his five teachers over a two-day period. At this point the control group was eliminated from the study.

After a six week delay, the experimental teachers were observed for a third time following the same procedure as on the two previous occasions. On this last observation period, the investigator observed all experimental teachers herself over the two week period.

When all the observation scoring sheets had been run through the optical scanner and converted into data cards, these cards were analyzed by the computer according to the statistical tests used, i.e., the Chi-square test and the Fisher z test.

---

<sup>34</sup>Krahmer, E. F. et al., "A Computerized Approach to Calculating Interaction Analysis Observation Matrices and Ratios," Educational and Psychological Measurement, 29 (Spring, 1969), pp. 187-90.

<sup>35</sup>M. P. J. Browne, "An Exploratory Study of Teacher-Pupil Interaction in Primary Reading Groups," (unpublished doctoral dissertation, University of Alberta, 1971), p. 102.



## INDICES

Twelve indices have been chosen on which to ascertain the effects of training in interaction analysis. These are:

1. The I/D ratio measures the proportion of indirect to direct teacher statements. Indirect (I) statements are considered to be ones which encourage students to participate, conversely, direct (D) statements are those which are considered to limit or restrict student participation. The I/D ratio is calculated by dividing the total number of tallies in columns 1 to 4 (indirect) by the number of tallies in columns 5 to 7 (direct) plus columns 1 - 4. An I/D ratio of 0.50 means that for every indirect statement there is one direct statement. An I/D ratio of 0.67 means that for every two indirect statements there is one direct statement and so on.<sup>36</sup>

2. A revised i/d ratio is used to determine the relative emphasis given to motivation as compared to control in a particular classroom. The number of tallies in columns 1 to 3 (motivation) are divided by the number of tallies in columns 1 to 3 and 6 and 7 (control). These categories are less concerned with the actual presentation of subject matter. This ratio eliminates the effects of categories 4 and 5, questioning and lecturing, respectively, and gives information about whether a teacher is direct or indirect in his approach to motivation and control.

---

<sup>36</sup>E. J. Amidon and N. A. Flanders, The Role of the Teacher in the Classroom (Minneapolis: Association for Productive Teaching, 1971), p. 37.



The revised i/d ratio and its variations will be denoted in future by use of lower case i/d.

3. The i/d row 8 measures the same influence pattern as the revised i/d ratio with respect to row 8 (student response-limited) only. It is calculated as follows, where the bracketed numbers represent cell address:

$$\frac{(8-1) + (8-2) + (8-3)}{(8-1) + (8-2) + (8-3) + (8-6) + (8-7)}$$

4. The i/d rows 8 and 9 measures the same influence pattern as the revised i/d ratio with respect to rows 8 and 9 (total student talk). It is calculated as follows:

$$\frac{(8-1) + (8-2) + (8-3) + (9-1) + (9-2) + (9-3)}{(8-1) + (8-2) + (8-3) + (8-6) + (8-7) + (9-1) + (9-2) + (9-3) + (9-6) + (9-7)}$$

5. The extended i/d ratio measures the amount of extended (a period longer than 3 sec.) indirect influence as compared to extended direct influence. It is calculated by dividing cells 1-1, 1-2, 1-3, 2-1, 2-2, 2-3, 3-1, 3-2, 3-3, 6-6, 6-7, 7-6, 7-7 into cells 1-1, 1-2, 1-3, 2-1, 2-2, 2-3, 3-1, 3-2, 3-3.

6. Extended indirect influence measures the percentage of tallies in a matrix found in cells 1-1, 1-2, 1-3, 2-1, 2-2, 2-3, 3-1, 3-2, 3-3.

7. Extended direct influence measures the percentage of tallies in a matrix found in cells 6-6, 6-7, 7-6, 7-7.

8. Vicious circle represents the percentage of tallies found in cells 6-6, 6-7, 6-10, 7-6, 7-7, 7-10. It indicates discipline problems to a greater extent than does the extended direct influence





measure itself.

9. 3-3 cell represents the extended use of students' ideas by the teacher. It seems to be directly related to the 9-9 cell.

10. 9-9 cell represents the percentage of student-initiated talk that is extended over a period of time.

11. Teacher talk is represented by the total of columns 1 to 7 and is reported as a percentage.

12. Student talk is represented by the total of columns 8 and 9 and is reported as a percentage.

Figure 4 pictorially represents these relationships.

#### STATISTICAL ANALYSIS

By 1949, Bales demonstrated the possibility of tabulating interaction analysis data in a matrix as sequence pairs by means of a laborious tabulation process.<sup>37</sup> Darwin, who developed a test of significance for interaction analysis data, pointed out that such a test could be developed by assuming one-to-one interdependence of verbal events. The calculations involved in his test required tabulation of the data in a matrix which resulted in a scheme of recording data as a series of numbers in a column which could later be tabulated in an 11 x 11 matrix.<sup>38</sup>

---

<sup>37</sup> N. A. Flanders, Teacher Influence, Pupil Attitudes and Achievement, (U. S. Government, Department of Health, Education and Welfare, 1965), p. 57.

<sup>38</sup> Ibid.



| Category | 1                           | 2 | 3             | 4 | 5 | 6                         | 7 | 8            | 9   | 10             | Total |
|----------|-----------------------------|---|---------------|---|---|---------------------------|---|--------------|-----|----------------|-------|
| 1        | Extended Indirect Influence |   |               |   |   |                           |   |              |     |                |       |
| 2        |                             |   |               |   |   |                           |   |              |     |                |       |
| 3        |                             |   | 3-3           |   |   |                           |   |              |     |                |       |
| 4        |                             |   |               |   |   |                           |   |              |     |                |       |
| 5        |                             |   |               |   |   |                           |   |              |     |                |       |
| 6        |                             |   |               |   |   | Extended Direct Influence |   |              |     | vicious circle |       |
| 7        |                             |   |               |   |   |                           |   |              |     |                |       |
| 8        | indirect 8                  |   |               |   |   | direct 8                  |   |              |     |                |       |
| 9        |                             |   | indirect 8, 9 |   |   |                           |   |              | 9-9 |                |       |
| 10       |                             |   |               |   |   |                           |   |              |     |                |       |
| Total    | Teacher Indirect            |   | Talk          |   |   | Direct                    |   | Student Talk |     |                |       |

Figure 4

Areas of the Matrix Which are Statistically Tested



Given two or more matrices, the null hypothesis concerning matrix distribution, i.e., that there will be no significant difference between the frequency distributions of two matrices, can be tested by the likelihood ratio criterion suggested by Darwin.<sup>39</sup> This analysis is based on the assumption that interaction sequences are one-dependent or Markoff chains. The basic interdependence of interaction data is present whenever communication events are recorded by an observer in a classroom. Each communication event affects the probabilities that a particular event will follow. Therefore, the assumption of one-dependence is a better approximation of classroom interaction than the zero-dependent assumption of the conventional Chi-square statistic.<sup>40</sup> Although communication events are more than one-dependent, the additional dependence i.e., the possibility that more than one event could follow as a result of an event, is small by comparison to the dependence between two events.<sup>41</sup>

The Darwin Chi-square test makes comparisons only of total matrix distribution. In order to compare the frequencies in isolated cells or clusters thereof, the Chi-square test will be used to compare the different groups.

Chi-square provides a measure of the discrepancy between the

---

<sup>39</sup>J. H. Darwin, "Note on the Comparison of Several Realizations of a Markoff Chain," Biometrika, 46, 1959, p. 413.

<sup>40</sup>Flanders, op. cit., p. 31.

<sup>41</sup>Ibid.



observed cell frequencies and those expected on the basis of the assumption of independence.<sup>42</sup> The expected cell frequencies are generated in the usual manner i.e., according to the multiplication theorem of probability. According to Ferguson

The multiplication theorem of probability states that the joint occurrence of two or more mutually independent events is the product of their separate probabilities. The joint probabilities are obtained, therefore, by multiplying the probabilities obtained from the marginal totals.<sup>43</sup>

Chi-square is used to compare observed with theoretical or expected frequencies. The observed frequencies are those obtained empirically by direct observation or experiment. The theoretical frequencies are generated on the basis of some hypothesis or line of theoretical speculation which is independent of the data at hand. If the differences between the observed and theoretical frequencies are significant, the hypothesis or theory that gave rise to the theoretical frequencies is rejected.

Chi-square is defined by

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

where O is an observed frequency and E is an expected or theoretical frequency.

To calculate a value of  $\chi^2$  we find the difference between the observed and expected values, square these, divide each difference by

---

<sup>42</sup>G. A. Ferguson, Statistical Analysis in Psychology and Education (New York: McGraw-Hill, 1966), p. 201.

<sup>43</sup>Ibid., p. 202.





the appropriate value, and sum over all frequencies.<sup>44</sup>

For example<sup>45</sup> one may formulate the hypothesis that a die is unbiased, in which case the probability of throwing any of the six possible values in a single toss is  $1/6$ . The frequencies expected on the basis of this hypothesis are the theoretical frequencies. In a series of 300 throws, the expected frequencies of each of the six sides occurring are 50 for each side. If the die is now thrown and the values are found to be 43, 55, 39, 56, 63 and 44, one then compares each of these frequencies with the expected 50 and sums the values to find  $\chi^2$ .

Since the value of  $\chi^2$  is a measure of the discrepancy between the observed and theoretical frequencies, if the discrepancy is large,  $\chi^2$  is large and conversely, if the discrepancy is small,  $\chi^2$  is small.

Chi-square was used to determine the probability levels of the indices of extended indirect influence, extended direct influence, vicious circle, 3-3 cell, 9-9 cell, teacher talk, and student talk.

The Fisher z test<sup>46</sup> was used to test the levels of significant difference of the I/D ratio, revised i/d ratio, i/d (ratio) row 8, i/d (ratio) rows 8 and 9, and the extended i/d ratio. This statistical procedure is used to test the significance of the difference between two independent proportions. To test the difference between two proportions, the observed difference between the two proportions is

---

<sup>44</sup>Ibid., p. 192.

<sup>45</sup>Ibid.

<sup>46</sup>Ibid., pp. 177-78.



divided by the estimate of the standard error of the difference to obtain

$$z = \frac{p_1 - p_2}{\sqrt{pq \left( \frac{1}{N_1} + \frac{1}{N_2} \right)}}$$

where  $p_1$  and  $p_2$  are proportions,  $p$  equals  $\frac{p_1 N_1 + p_2 N_2}{N_1 + N_2}$

and  $q = 1 - p$ .

The value of  $z$  may be interpreted as a deviate of the unit normal curve provided  $N_1$  and  $N_2$  are reasonably large and  $p$  is neither very small nor very large.<sup>47</sup>

For example, if a group of teachers had an extended i/d ratio of 0.693 based on  $N = 140$  and after receiving a treatment had an extended i/d ratio of 0.920 based on  $N = 246$ , the level of significance of the difference between the two proportions could be calculated as follows:

$$\begin{aligned} p &= \frac{p_1 N_1 + p_2 N_2}{N_1 + N_2} \\ &= \frac{.693(140) + .920(249)}{140 + 249} \\ &= 0.838 \end{aligned}$$

$$\begin{aligned} q &= 1.0 - p \\ &= 0.162 \end{aligned}$$

$$z = \frac{p_1 - p_2}{\sqrt{pq \left( \frac{1}{N_1} + \frac{1}{N_2} \right)}}$$

---

<sup>47</sup>Ibid., p. 177.



$$= \frac{.693 - .920}{\sqrt{.838(.162) \left[ \frac{1}{140} + \frac{1}{249} \right]}}$$

$$= -5.837$$

Interpreting the value -5.837 as a unit normal curve deviate, the observed difference is significant. The chances are one in less than 1,000 that the observed difference could result from sampling. Therefore, one can conclude that there was a difference between pre- and post-treatment behavior as measured by the extended i/d ratio.

The critical values for the Fisher z test are 1.96, 2.58, and 3.29 for the 0.05, 0.01, and 0.001 levels, respectively. For the same three levels, the Chi-square critical values are 3.84, 6.64, and 10.83 (degrees of freedom = 1).

The level of statistical significance for the rejection of the null hypothesis regarding the training effect is 0.001. (The reader is referred to Appendix C which reports the pilot study.) This very high level has been chosen because lower probability levels may not allow generalizations attributable specifically to the training effect because of the limited size of the sample. The idiosyncracies of the individual, more apparent in such a limited sample, might be construed as due to training when they are not. Therefore, the higher level of significance may act as a safeguard against gross misinterpretation.

This study is limited in the amount of control possible as the individuals cannot really be matched on enough characteristics since the size of the sample is not large enough to assure that random



assignment equalizes the two groups with respect to different characteristics. The investigator had at her disposal the help of only one other person, which limited the scope of the study. It must be noted that this study is exploratory in nature. In a sense, it is a case study of a few teachers whose behavior changes are described in detail in order to determine the effect of the training as measured by the twelve variables.





## CHAPTER IV

### TREATMENT

#### INTRODUCTION

Although in-service activities using interaction analysis have been tried in various other subject areas as cited in the second chapter, few have been conducted in the area of second language instruction. The treatment devised for this study has integrated various techniques from the aforementioned studies as well as developed some new ones.

In the formulation of their study, Bowers and Soar began with the premise that the most effective learning takes place in a classroom where pupils and teachers share the responsibility for planning and directing the work of the classroom and further that this requires training the teacher in specific goals necessary to conduct such a classroom.<sup>1</sup>

Such a training program would consist of the following elements: (1) learning through experience, (2) increased awareness of one's own behavior and how it affects others, (3) the opportunity to practise the necessary skills in a "safe" environment, (4) increased understanding of and sensitivity to forces at work in individuals and

---

<sup>1</sup>N. D. Bowers and R. S. Soar, "Evaluation of Laboratory Human Relations Training for Classroom Teachers", Studies of Human Relations in the Teaching-Learning Process V. Final Report Contract #8143 with the Cooperative Research Branch, U. S. Office of Education, Department of Health, Education and Welfare, 1961, p. 1.



groups.<sup>2</sup>

The successful implementation of such a program would require a climate in which (1) ideas and feelings could be exposed, (2) the teacher received feedback on his actions, (3) a supportive atmosphere existed, and (4) where he could try exploratory behavior.<sup>3</sup>

The present study has incorporated the above elements. The teachers learned the theory behind the Flanders System of Interaction Analysis and then applied it to their own classroom activities. By constantly working with various matrices of their own method of instruction (Voix et Images de France) the teachers became more aware of their own behavior and how it affected their students. In each training session the teachers practiced the skills for which they had learned the theory. Through group discussion, the teachers were afforded the opportunity to improve their understanding of and sensitivity to the forces at work in individuals and in groups.

The climate provided by the study also followed the Bowers and Soar principles. Ideas and feelings were shared by the members of the group at the training sessions. Feedback was provided to each member by the reception of his ideas by the others. The exploratory attempts each teacher made in his classroom as recorded on the weekly audiotapes were discussed and analyzed by the group. As well, the Raack<sup>4</sup> principles

---

<sup>2</sup>Ibid., pp. 5-6.

<sup>3</sup>Ibid., pp. 11-14.

<sup>4</sup>M. L. Raack, "The Effect of an In-Service Education Program on Teacher Verbal Behavior," (unpublished doctoral dissertation, University of California at Los Angeles, 1967), pp. 105-108.



for effecting change in attitude and behavior were implemented:

1. Behavioral change is more likely to occur when one feels a need for change.
2. Opportunity to practice suggested changes in behavior must be provided in order to insure such changes.
3. New behavior is more apt to become habitual when the behavior is reinforced.
4. A change in behavior is more likely to occur when there is group support for change.
5. Initial change in behavior is more likely to occur in a new environment when one is freed from old associations, norms, or conditions which might operate as obstacles to change.
6. An educational program which develops an emotional commitment involving both attitudes and knowledge and their interrelationships is more likely to produce change in behavior than a program concerned only with knowledge.

Raack's principles provide support for the inclusion of volunteers in the study and the use of a new semester. Her study further supports the concepts of group support and a supportive environment as postulated by Bowers and Soar (in their study).

The atmosphere in the training sessions was supportive in that the status and power difference<sup>5</sup> between the investigator and the teachers was similar. The training instructor was a graduate student at the University whose purpose in conducting the study was to do research into the effectiveness of one technique of in-service training. The teachers knew that their performance was not the object of evaluation. As well, the other teachers in the group acted as

---

<sup>5</sup>N. A. Flanders, "Interaction Analysis and In-Service Training," mimeographed copy from the Far West Lab for Educational Research and Development, p. 13.



sympathetic listeners to the problems set forth by each teacher.

Each teacher attempted to modify his behavior weekly according to the new information learned at the training sessions. This weekly sample of behavior which was audiotaped allowed him to experiment and the feedback received on it gave him the opportunity to further modify his behavior so that it more closely resembled his intent.

Although Moskowitz has developed a set of training materials for second language teachers,<sup>6</sup> it was felt that since the training sequence would consist of only twelve hours, it would be more appropriate to use materials which focused entirely on the method of instruction, Voix et Images de France, which the teachers were teaching. The Monod videotape<sup>7</sup> was used as the basis for the training materials developed by the investigator. This videotape was developed in order to demonstrate how VIF should be taught. The method of instruction for each phase is explained and illustrated by actual classroom teaching. It was felt that the use of the videotape would allow the teachers to more easily incorporate the principles of interaction analysis into their teaching behavior, as they would be dealing with well-known material.

---

<sup>6</sup>G. Moskowitz, The Foreign Language Teacher Interacts (Minneapolis: Association for Productive Teaching, 1970), Manual and audiotapes.

<sup>7</sup>M. J. Monod, "The Four Phases of Voix et Images de France," B & W, ½ inch, 42 minutes, Department of Secondary Education, University of Alberta, 1969.





## TREATMENT

Once the teachers had been selected and randomly assigned to either the experimental or control group, keeping training and experience<sup>8</sup> similar for the teachers, the five subjects of the experimental group and the investigator met weekly for three hours on four separate occasions. The control group received no training during the experiment.

Each teacher was given a manual which contained relevant literature for each training session which was handed out each week. It included five sections: (1) an introduction, (2) interaction analysis theory, (3) Flanders System of Interaction Analysis including a description and procedures, (4) the application of IA to second language teaching, and (5) IA and behavior change. The training exercises were also handed out each week as they were to be done in the training session.

The objectives of the training program are presented in Figure 5. The nine major objectives were divided among the four sessions. Those objectives which were carried out each week are included in the report of each of the sessions.

## FIRST SESSION

During the first training session, the teachers were introduced

---

<sup>8</sup>L. P. Hoehn, ed., "Teaching Behaviors Improvement Program, Michigan-Ohio Regional Education Lab," Detroit, July 1969, p. 42.



By means of discussion and active teacher participation the following objectives were implemented:

1. understand the theory of interaction analysis
  - 1.1 define interaction analysis
  - 1.2 analyze its assumptions
  - 1.3 identify its purpose
  - 1.4 identify the different types
2. understand Flanders System of Interaction Analysis
  - 2.1 identify categories
  - 2.2 discriminate among categories
  - 2.3 learn coding procedure
  - 2.4 practice coding
  - 2.5 learn observation procedure
  - 2.6 practice observation
3. understand a matrix
  - 3.1 define a matrix
  - 3.2 learn tabulation procedure
  - 3.3 tabulate it
  - 3.4 learn areas
  - 3.5 interpret areas
  - 3.6 learn descriptive indices
  - 3.7 calculate indices
4. understand a histogram
  - 4.1 define a histogram
  - 4.2 construct one
5. understand a flow chart
  - 5.1 define a flow chart
  - 5.2 construct one
6. develop teaching strategies
  - 6.1 define a specific purpose
  - 6.2 enumerate appropriate strategies
7. estimate reliability
  - 7.1 define Scott's Reliability Coefficient
  - 7.2 learn to calculate it
  - 7.3 calculate examples
8. apply IA to VIF instruction
  - 8.1 postulate questions
  - 8.2 answer them
  - 8.3 formulate specific applications
9. apply IA to a program of behavior change
  - 9.1 discuss a possible program
  - 9.2 postulate appropriate steps to execution

Feedback of actual teaching behavior was also provided to the teachers.

Figure 5

Objectives of the Training Program



to one another. It was pointed out to them that since they would be working together closely for the month that it was important that they "open" themselves for further learning in a group environment.

Once the basic aims and objectives of the program were explained and discussed, the teachers were given an introduction to the study of interaction analysis. The specific objectives of the first training session were to:

1. understand the theory of interaction analysis
  - 1.1 define IA
  - 1.2 analyze its assumptions
  - 1.3 identify its purpose
  - 1.4 identify the different types
2. understand Flanders System of Interaction Analysis
  - 2.1 identify the categories
  - 2.2 discriminate among the categories
  - 2.3 learn coding procedure
  - 2.4 practise coding
3. understand a matrix
  - 3.1 define a matrix
  - 3.2 learn tabulation procedure
  - 3.3 tabulate it

The first objective was handled by means of discussion as well as the use of relevant visual media. Figure 2 presented the FSIA. This formed the basis of the second objective. Once the teachers were familiar with the categories, they were given typescripts of a T2a<sup>9</sup> (manipulation of the variable elements) of VIF, as modified by the investigator. The first typescript, episode A, contained 20 tallies and was coded by all members together. The teachers then coded episode B individually (40 tallies) with the training instructor helping only

---

<sup>9</sup>This and all future videotape sections of transposition mentioned are taken from the Monod videotape.



when questions arose. Episode C (100 tallies) was then coded by each member individually and then corrected and discussed as a group activity.

When the second objective had been completed, the teachers were shown how to tabulate the data into a matrix. The procedure was explained and demonstrated after which the teachers practiced using episodes A, B, and C and tabulated three individual matrices.

Episode C has been included in the thesis as an example of a typical T2a. The typescript and the coding master are presented in Appendix D. Within the body of this text, the methods of data display and interpretation are presented in a series of figures. Each is based on episode C to demonstrate exactly what types of activities the teachers carried out. Figure 6 presents the tabulated data into a matrix of episode C which the teachers did as objective 3.3.

In order to insure that the learning which took place in the training session did not merely remain theoretical with no occasion to practice it in the classroom, the teachers were assigned the preparation of a fifteen minute audiotape of the classroom interaction in the class being used in the experiment. This afforded the teachers the opportunity to experiment with new behaviors. The audiotapes were coded and analyzed by the training instructor who then provided each teacher with feedback on his behavior modification each week. Tuckman et. al. have found that verbal feedback was the only treatment (one of three, the other two being training in interaction analysis, and listening to tapes) which produced significant ( $p < 0.05$ ) change in





|       | 1  | 2  | 3 | 4  | 5 | 6 | 7 | 8  | 9 | 10 | Total |
|-------|----|----|---|----|---|---|---|----|---|----|-------|
| 1     |    |    |   |    |   |   |   |    |   |    | --    |
| 2     |    |    |   | 13 | 1 | 2 |   | 1  |   | 1  | 18    |
| 3     |    |    |   | 1  |   |   |   | 1  |   |    | 2     |
| 4     |    |    |   |    |   | 1 |   | 23 | 1 |    | 25    |
| 5     |    |    |   | 1  |   | 1 |   |    |   |    | 2     |
| 6     |    |    |   | 1  | 1 |   |   | 6  |   |    | 8     |
| 7     |    |    |   |    |   |   |   | 3  |   | 1  | 4     |
| 8     |    | 17 | 2 | 7  |   | 4 | 4 | 2  | 1 |    | 37    |
| 9     |    | 1  |   | 1  |   |   |   |    |   |    | 2     |
| 10    |    |    |   | 1  |   |   |   | 1  |   |    | 2     |
| Total | -- | 18 | 2 | 25 | 2 | 8 | 4 | 37 | 2 | 2  | 100   |

Figure 6

Tabulated Matrix of T2a Episode C



behavior.<sup>10</sup> The present study taught the teachers how to use interaction analysis and gave them weekly feedback on their teaching behavior.

## SECOND SESSION

Continuing in the framework of the general objectives, the specific objectives of the second session were as follows:

- 2.5 learn observation procedure
- 2.6 practice observation
- 3.4 learn areas (of a matrix)
- 3.5 interpret areas
- 3.6 learn descriptive indices
- 3.7 calculate indices
- 4. understand a histogram
  - 4.1 define a histogram
  - 4.2 construct one

During the second session, the teachers learned the observation procedure for the Flanders system. The teachers then proceeded to code a T2b (description of a picture) from the videotape recording. The segment contained 100 tallies. The instructor played the whole segment through once for them so that the teachers could familiarize themselves with the classroom situation portrayed. The teachers then coded the excerpt. Since it is important to develop tempo, approximately ten tallies were coded and then the videotape was stopped. The same sequence was replayed until the teachers felt that they had recorded the sequence correctly. This was verified and the coding continued.

---

<sup>10</sup>B. W. Tuckman, K. M. McCall, and R. T. Hyman, "The Modification of Teacher Behavior: Effects of Dissonance and Coded Feedback," American Educational Research Journal, 6 (November, 1969), pp. 616-617.



After approximately thirty tallies had been correctly coded, the videotape was stopped only after another twenty tallies had been made. This provided approximately one minute of uninterrupted coding before the work was verified. The same manner was used until the whole segment had been tallied.

The areas of a matrix which are generally interpreted were explained and discussed. Once the teachers felt that they understood the areas, they learned how to calculate the descriptive indices associated with them. This was practiced on episodes A, B, and C.

Figure 7 presents an example of the indices calculated. Each of the indices has been elaborated on pages 59-62 of this text. The indices provide a means of visual display of the interaction data.

At this point the teachers learned how to construct a histogram. This was demonstrated and then the teachers practiced on episodes A, B, and C. The usefulness of this mode of visual display was discussed. Figure 8 presents the histogram of T2a episode C. A histogram provides a quick visual analysis of the category distribution. It is especially useful for the comparison of category distribution for more than one matrix over a period of time.

For homework, the teachers were asked to complete a tabulated matrix, a histogram, and the descriptive indices for the T2b segment which they had coded. They were also asked to bring another fifteen minute audiotape of their teaching the following week.



|                      |             |                      |            |                   |            |
|----------------------|-------------|----------------------|------------|-------------------|------------|
| I/D Ratio            | <u>0.76</u> | Extended<br>Indirect | <u>0</u>   | 3-3 Cell          | <u>0</u>   |
| Revised<br>i/d Ratio | <u>0.63</u> | Extended<br>Direct   | <u>0</u>   | 9-9 Cell          | <u>0</u>   |
| i/d Row 8            | <u>0.70</u> | Extended<br>i/d      | <u>0</u>   | Vicious<br>Circle | <u>1%</u>  |
| i/d Rows 8<br>+ 9    | <u>0.72</u> |                      |            |                   |            |
| Teacher Talk         | <u>59%</u>  | Student Talk         | <u>39%</u> | s/t               | <u>.66</u> |

Figure 7

Descriptive Indices of T2a Episode C





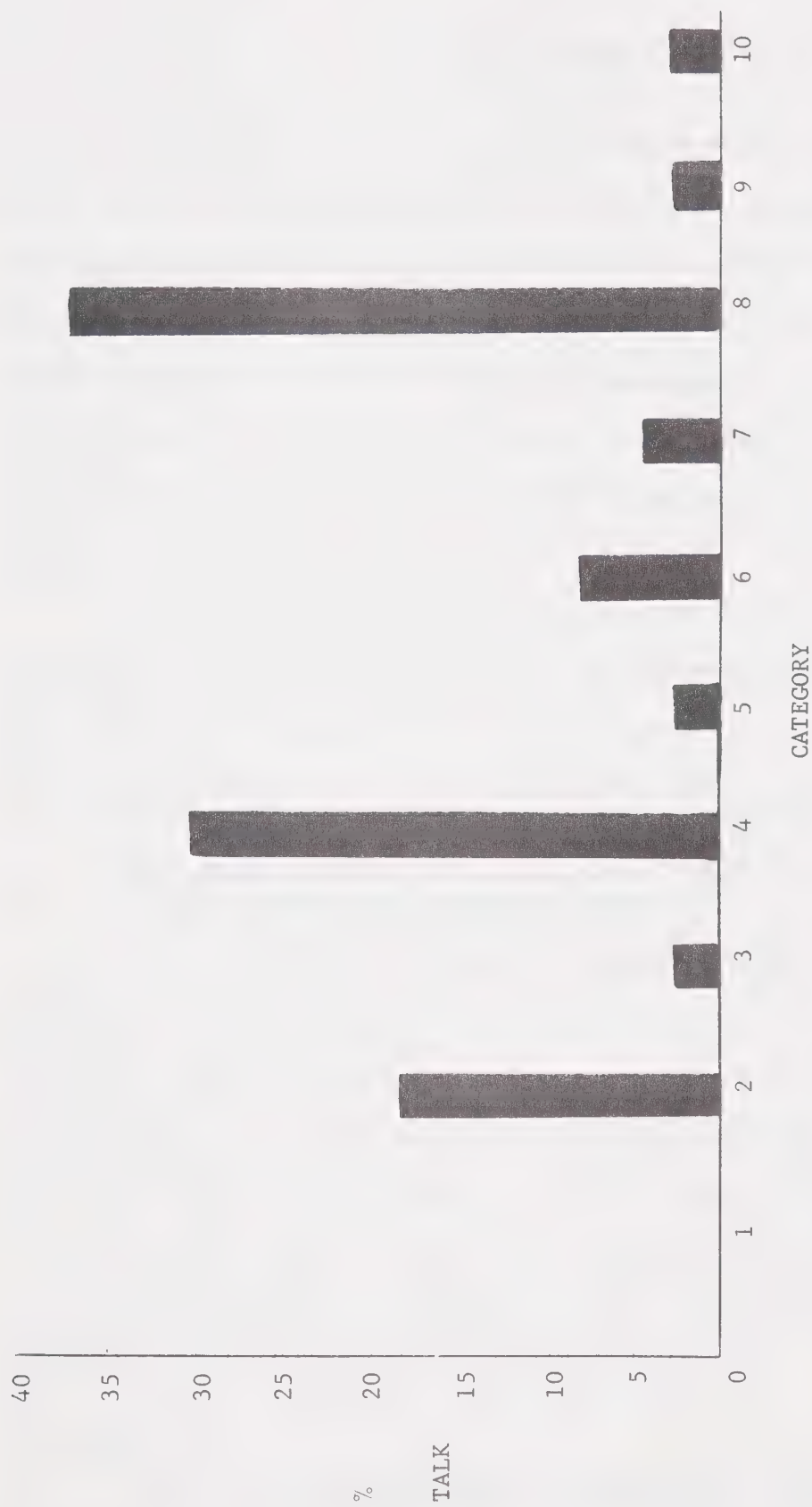


Figure 8  
Histogram of T2a Episode C



## THIRD SESSION

This session began with a discussion of each teachers' first audiotape which had been analyzed by the training instructor. Each teacher was provided with a tabulated matrix, a histogram, and the descriptive indices of his first audiotape. As well, all of these displays were put on a master sheet for comparison of the teachers' various displays. These were discussed as a group activity wherein each teacher shared his tape and its interpretation with the other members of the group.

By this time the group appeared to have developed a sense of community belonging and cohesiveness. The teachers eagerly shared their ideas and feelings with the other members.

Group attitudes are much more potent than individual ones because by accepting membership of the group and becoming integrated into it, the person comes to accept its norms, since that in part is what group membership means.<sup>11</sup>

When the matrix, histogram, and indices of the T2b were corrected, the teachers seemed very keen to compare the results of these to results found on their own matrices. The impact of actual interpretation of a sample of their own teaching behavior appeared to make the analysis more meaningful in light of what they had learned. To have presented data of their own teaching behavior earlier in the program would probably not have had the same impact as the teachers would not have had the tools with which to interpret them.

---

<sup>11</sup>J. A. C. Brown, Techniques of Persuasion (Middlesex: Penguin, 1963), p. 206.



The objectives of the third session were:

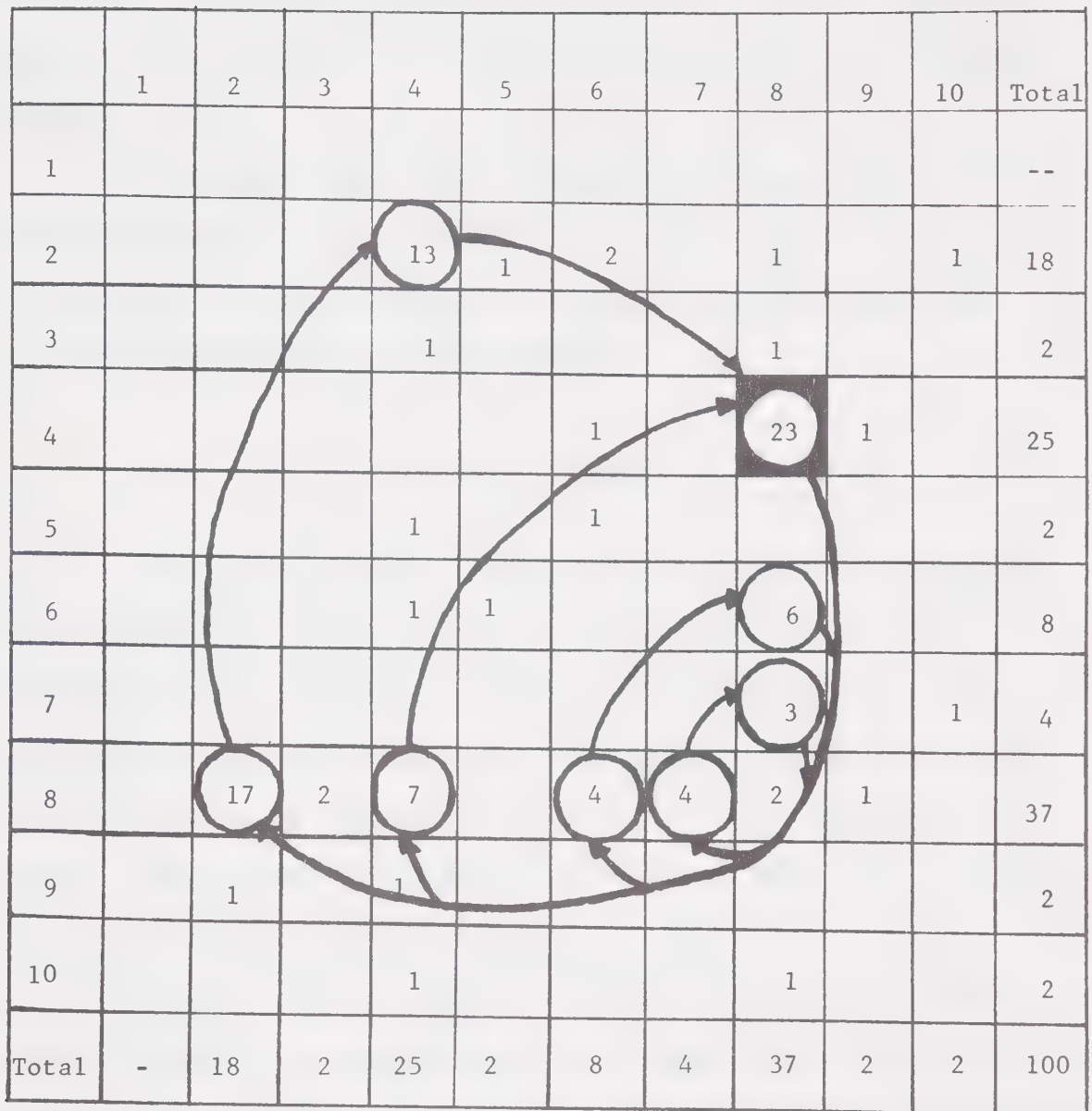
- 2.6 practice observation
- 5. understand a flow chart
  - 5.1 define a flow chart
  - 5.2 construct one
- 6. develop teaching strategies
  - 6.1 define a specific purpose
  - 6.2 enumerate appropriate strategies

After the discussion, the teachers attacked the coding practice of the T4a (questions on students' lives) with enthusiasm. This segment was the longest one they coded, 200 tallies. It was done in the same manner as the previous segment.

Another way to display and interpret data, namely the flow chart, was introduced. Once the teachers understood its purpose and nature they again practiced on the matrices they had tabulated to this point, episodes A, B, and C of the T2a and the T2b. Figure 9 presents a flow chart of episode C. A flow chart presents another form of visual display. It focuses primarily on the behavior pattern displayed by the teacher by linking the most commonly occurring patterns into a chain, such that cause precedes effect.

Having now coded three different types of transposition, the teachers started to develop teaching strategies designed to improve the amount and quality of student participation. This was the goal of behavior modification most frequently voiced by the participating teachers. These strategies consisted of methods the teachers themselves had used or heard about from fellow colleagues. The major types of strategies devised can be displayed pictorially as follows. The numbers represent the Flanders category, the arrows the following





Minimum number is 3

Figure 9

Flow Chart of T2a Episode C





category. The letters ABC represent different students. Figure 10 presents the strategies which the teachers developed in the training session.

The teachers were asked to prepare and bring a final fifteen minute audiotape of their classroom interaction. They were also asked to tabulate a matrix, construct a histogram and a flow chart, and calculate the indices for the T4a segment.

#### FOURTH SESSION

The second audiotape prepared by each teacher was discussed. By means of the histogram, it was possible to demonstrate the reapportionment of tallies in the different categories. The flow chart allowed the teachers to see the change in teaching pattern if any. The matrix and descriptive indices depicted a change in given areas. This discussion, conducted in the same manner as the previous one, allowed each teacher to focus on his own behavior change and yet to participate in that of the other teachers. The teachers became very interested in discussing various techniques and strategies used by each other. These tape discussions proved to be highly stimulating to both the teachers and the instructor. The T4a results were also discussed. By this time, the teachers were actively making diagnoses of what the videotape teachers had done and how it could be improved.

The objectives of the fourth session were:

2.6 practice observation

7. estimate reliability

7.1 define Scott's reliability coefficient



---

1. Dites à quelqu'un de faire quelque chose!

$$6 \rightarrow 8 \rightarrow 8 \rightarrow 8$$

A      B      C

2. Demandez à quelqu'un si. . .

$$6 \rightarrow 8 \rightarrow 8$$

A      B

3. . . . Une autre réponse. .

$$4(6)* \rightarrow 9$$

4. Posez une question à quelqu'un!

$$6 \rightarrow 9 \rightarrow 8$$

A      B

5.  $4 \rightarrow 8 \rightarrow \left\{ \begin{array}{l} \text{Continuez} \\ \text{alors} \\ 2(3)* \end{array} \right\} \rightarrow 9$

6.  $4 \rightarrow 8 \rightarrow \left\{ \begin{array}{l} \text{pourquoi} \\ \text{quand} \\ \text{ou} \\ \text{comment} \end{array} \right\} \rightarrow 8(9)*$

3

---

\* alternate possibility

Figure 10

Some Strategies to Improve the Quantity and Quality  
of Student Participation



- 7.2 learn to calculate it
- 7.3 calculate examples
- 8. apply IA to VIF instruction
  - 8.1 postulate questions
  - 8.2 provide possible answers
  - 8.3 formulate specific applications
- 9. apply IA to a program of behavior change
  - 9.1 discuss a possible program
  - 9.2 postulate steps to carry it out

The teachers practiced coding a T3b (résumé) segment of 100 tallies. They were asked to complete the data analysis of this segment at home.

The teachers then learned a quick method of estimating observer agreement in the field using Scott's Reliability Coefficient. Two hypothetical problems were included for practice.

The application of interaction analysis to second language teaching, in particular the VIF method, in the form of teacher questions and testimonials cited by Moskowitz were discussed.<sup>12</sup> Thus, as well as the use of actual VIF transpositional segments for training purposes and the weekly feedback of each teacher's own evolving teaching behavior, this discussion of the Moskowitz information gave the teachers further opportunity to elaborate and intensify their knowledge of the usefulness of interaction to their field of instruction.

The steps necessary to implement a program of behavior change<sup>13</sup> were discussed. The procedure for a continuing program of behavior change as outlined was used as a starting point for the discussion.

---

<sup>12</sup>Moskowitz, op. cit., pp. 73-85.

<sup>13</sup>E. J. Amidon and N. A. Flanders, op. cit., pp. 93-97.



## EXTRA SESSIONS

Two additional one-hour sessions were held for the purpose of providing the teachers with feedback. The first supplementary one-hour session was held the following week to discuss the T3b homework. It was found that the homework exercises and their ensuing discussion provided reinforcement for what was learned in class. The third audiotapes were also discussed. Each teacher now had three fifteen minute samples of his own teaching behavior recorded during the course of the training program. Appendix E presents an example of one teacher's behavior modification over this period. The particular example was chosen as it represented the greatest change of the five teachers during this period.

Another supplementary one-hour session was held two weeks later when all post-treatment observations had been completed and the statistical analysis of the data was complete. The teachers saw both their pre- and post-treatment matrices so that they had a basis for comparison of the behavior modification which had occurred. The teachers discussed each others' results as well as those for the total experimental group. The teachers could then privately compare their feedback from the training sessions with the experimental data as each teacher was given a copy of his pre- and post-treatment data as well.

The third chapter presented the design for the study. In this chapter, the actual training program in interaction analysis for VIF teachers has been presented. The effectiveness, of the training program, as measured by the indices comprising the sub-hypotheses, is





reported in the next chapter which is concerned with the results, analysis, and interpretation of the data.



## CHAPTER V

### ANALYSIS, RESULTS, AND INTERPRETATION

#### INTRODUCTION

The computations involved in the data analysis were performed on the University of Alberta IBM 360/367 computer. Programs used were made available by the computer program library of the Division of Educational Research Services.

The Darwin Chi-Square was used to analyze the 10 x 10 matrices for the Flanders System of Interaction Analysis. The levels of significant differences between isolated cells and areas of two matrices were computed by using the Chi-square test. The Fisher z test was used to compute the significance of differences between selected ratios of two matrices. The level of significance chosen for the rejection of the null hypothesis was  $p=0.001$  to maximize the possibility that it is the effect of the training being measured and not the idiosyncracies of the individual teachers.

In this chapter each of the steps of transposition done by the teachers during the observation periods will be considered. The results of the analysis for each hypothesis will be reported and discussed in turn.

#### FRAMEWORK FOR INTERPRETATION OF RESULTS

For a review of the steps of the transpositional phase the



reader is referred to p. 40. The first step to the interpretation of the results will be to report which steps of transposition were observed. Each teacher was observed on two consecutive days for thirty minutes on each occasion. This procedure was followed before and after the treatment for both the experimental and control groups, as well as for the delayed post-treatment observation of the experimental teachers only. The control teachers were eliminated from the study at the conclusion of the post-treatment observations.

The steps of transposition which were observed on each visit are reported in Table VI. The control teachers are identified by the I.D. numbers beginning with 100 and the experimental teachers by the I.D. numbers beginning with 200. The last digit of each I.D. number is the same for the teachers of similar training and experience. The numbers are ranked from 1 to 5 for highest to lowest experience teaching Voix et Images de France.

The data of Table VI indicate that the teachers were quite variable in the steps of transposition taught during the observation periods. It is noteworthy that teachers 105 and 205 who have the least teaching experience used only the T2a (manipulation) step on each occasion. The greatest variability in teaching seems to have occurred for teachers in the middle range of experience (four to six years.)

The table does not indicate the amount of time that was spent in each activity, merely that variety of instruction within the confines of the transpositional phase of a VIF unit did occur.

Table VII presents the number of times both the control group and the experimental group were involved in each step of transposition



TABLE VI  
STEPS OF TRANSPOSITION DONE BY THE TEACHERS  
DURING EACH OBSERVATION PERIOD

| Teacher<br>I.D. | Observation Period |            |                |            |            |                |
|-----------------|--------------------|------------|----------------|------------|------------|----------------|
|                 | pre-treatment      |            | post-treatment |            | delayed    | post-treatment |
|                 | 1                  | 2          | 3              | 4          | 5          | 6              |
| 101             | 2a                 | 4a         | 2a             | 4a, 2b     |            |                |
| 102             | 2a                 | 2a         | 2a             | 2a         |            |                |
| 103             | 2a, 3a             | 3a, 3b, 4a | 2a, 2b         | 3b         |            |                |
| 104             | 2a                 | 3b, 4a     | 2a, 2b         | 2a, 3a, 4a |            |                |
| 105             | 2a                 | 2a         | 2a             | 2a         |            |                |
| 201             | 2a                 | 2a         | 2a             | 3b, 2a     | 2a, 3a     | 2a             |
| 202             | 2a                 | 2a         | 2a             | 4a         | 2a, 3a, 4a | 3a, 3b, 4a     |
| 203             | 2a                 | 2a, 2b     | 2a, 4a         | 2b         | 2a, 2b     | 2b, 3b         |
| 204             | 3a, 4a             | 4a         | 3a, 3b         | 3a, 3b, 4a | 3a, 4a     | 4a             |
| 205             | 2a                 | 2a         | 2a             | 2a         | 2a         | 2a             |

2a manipulation of variable elements

2b picture description

3a content questions

3b résumé

4a questions on students' lives





TABLE VII  
NUMBER OF TIMES EACH STEP OF TRANSPOSITION WAS DONE  
BY THE TWO GROUPS

| Transposition<br>step | pre-treatment |      | post-treatment |    | delayed<br>post-treatment |
|-----------------------|---------------|------|----------------|----|---------------------------|
|                       | CG*           | EG** | CG             | EG | EG                        |
| 2a                    | 7             | 8    | 8              | 6  | 6                         |
| 2b                    | 0             | 1    | 3              | 1  | 2                         |
| 3a                    | 2             | 1    | 1              | 2  | 4                         |
| 3b                    | 2             | 0    | 1              | 3  | 2                         |
| 4a                    | 3             | 2    | 2              | 3  | 4                         |
| Total                 | 14            | 12   | 15             | 15 | 18                        |

\* control group

\*\* experimental group

2a manipulation of variable elements  
 2b picture description  
 3a content questions  
 3b résumé  
 4a questions on students' lives



for each observation period. Notably, the control group demonstrated a greater variety of activity during the pre-treatment observation period (14 as compared to 12 for the experimental group). During the post-treatment observation period, both groups used an equal number of different activities. During the delayed post-treatment observation, the experimental group used 18 activities, indicating measurable growth of flexibility over the pre-treatment period when only 12 activities had been used. On all occasions for both groups the most commonly used activity was the T2a (manipulation) step of transposition. However, whereas initially its closest rival activity numbered 3 for both groups, by the delayed post-treatment observation period its closest rival activities both numbered 4 (3a and 4a) for the experimental group. Proportionally, the T2a activity was less often used at that point by the experimental teachers. This might be interpreted as suggesting that the training program affected the experimental teachers' perception of the function of each step of transposition with respect to the sequencing procedure.

The above description of the steps of transposition that each teacher used during the observation periods and the distribution of activity for both groups during the different observation periods sets a framework for the discussion of each hypothesis and its results.

#### INTER-GROUP CORRELATION

Hypothesis 1.0 and hypothesis 2.0 refer to the comparison of the two groups before and after the treatment. The experimental teachers



received twelve hours of instruction in interaction analysis as the treatment. The control group received no training. The analysis, results, and interpretation of each hypothesis will be discussed in turn. Hypothesis 1.0 deals with the difference between the two groups before the treatment began. It is restated here:

H 1.0 There is no significant difference between the experimental group and the control group with respect to pre-treatment behavior on the following indices:

- 1.1 I/D ratio
- 1.2 revised i/d ratio
- 1.3 i/d row 8
- 1.4 i/d rows 8 and 9
- 1.5 extended i/d
- 1.6 extended indirect influence
- 1.7 extended direct influence
- 1.8 vicious circle
- 1.9 3-3 cell
- 1.10 9-9 cell
- 1.11 teacher talk
- 1.12 student talk

For a description of the specific computational procedures used for the above indices, the reader is referred to pages 59-62.

The results of the analysis of the difference between the ratios of the two groups are presented in Table VIII. The difference between the groups on each sub-hypothesis was not statistically significant at the 0.001 level of confidence. However, sub-hypotheses 1.3 and 1.4 were statistically significant beyond the 0.01 level of confidence. This significant difference may be attributable to the greater variability of activity by the control group during the first observation period. The control group made more use of the third and fourth steps of transposition which pertain to higher level student activities requiring less correction than did the experimental group (7 as compared to 3,



TABLE VIII  
COMPARISON OF THE EXPERIMENTAL AND CONTROL  
GROUPS ON RATIOS BEFORE THE TREATMENT

| Ratio         | experimental<br>group | control<br>group | difference | z      | p    |
|---------------|-----------------------|------------------|------------|--------|------|
| I/D           | .629                  | .636             | .007       | -0.658 | n.s. |
| revised i/d   | .510                  | .516             | .006       | -0.379 | n.s. |
| i/d row 8     | .577                  | .632             | .055       | -3.099 | n.s. |
| i/d rows 8, 9 | .583                  | .629             | .046       | -2.660 | n.s. |
| extended i/d  | .360                  | .250             | .110       | 1.589  | n.s. |





respectively).

The control group praised the students slightly more than did the experimental group. Figure 11 presents a histogram of the talk distribution for the two groups before the treatment. The control group also criticized the students' answers somewhat less than did the experimental group. The amount of student talk for the experimental teachers is higher because one of the control teachers did not follow the method precisely in that she used a tape recorder in her T2a, accounting for less student talk and more silence.

Table IX presents the results of the analysis of sub-hypotheses 1.6 to 1.12. Sub-hypotheses 1.8 and 1.12 were rejected at the 0.02 and 0.007 levels, respectively. Teacher 105 made use of a tape recorder during her T2a sessions, an activity which is not customary during any step of transposition. The teacher was conducting a review of a lesson learned in a previous semester. The use of the tape recorder, coded as category 10, accounted for a fairly high proportion of the 11.6 percent of all category 10 coded for her. Also, Teacher 101, who made use of a game during her T4a activity had 9.5 percent of total time coded as category 10. These two proportions of category 10, silence or confusion, were considerably higher for teachers 101 and 105 than for the other teachers in either group whose proportions of category 10 ranged from 1.1 to 5.5 percent. In addition, teacher 101 accounted for a high proportion of the vicious circle tallies as once a direction was given she would wait for compliance. Teacher 105 would tell the students to watch the screen and listen to the tape recorder. These instructions were then followed by the tape recorder playing. These two



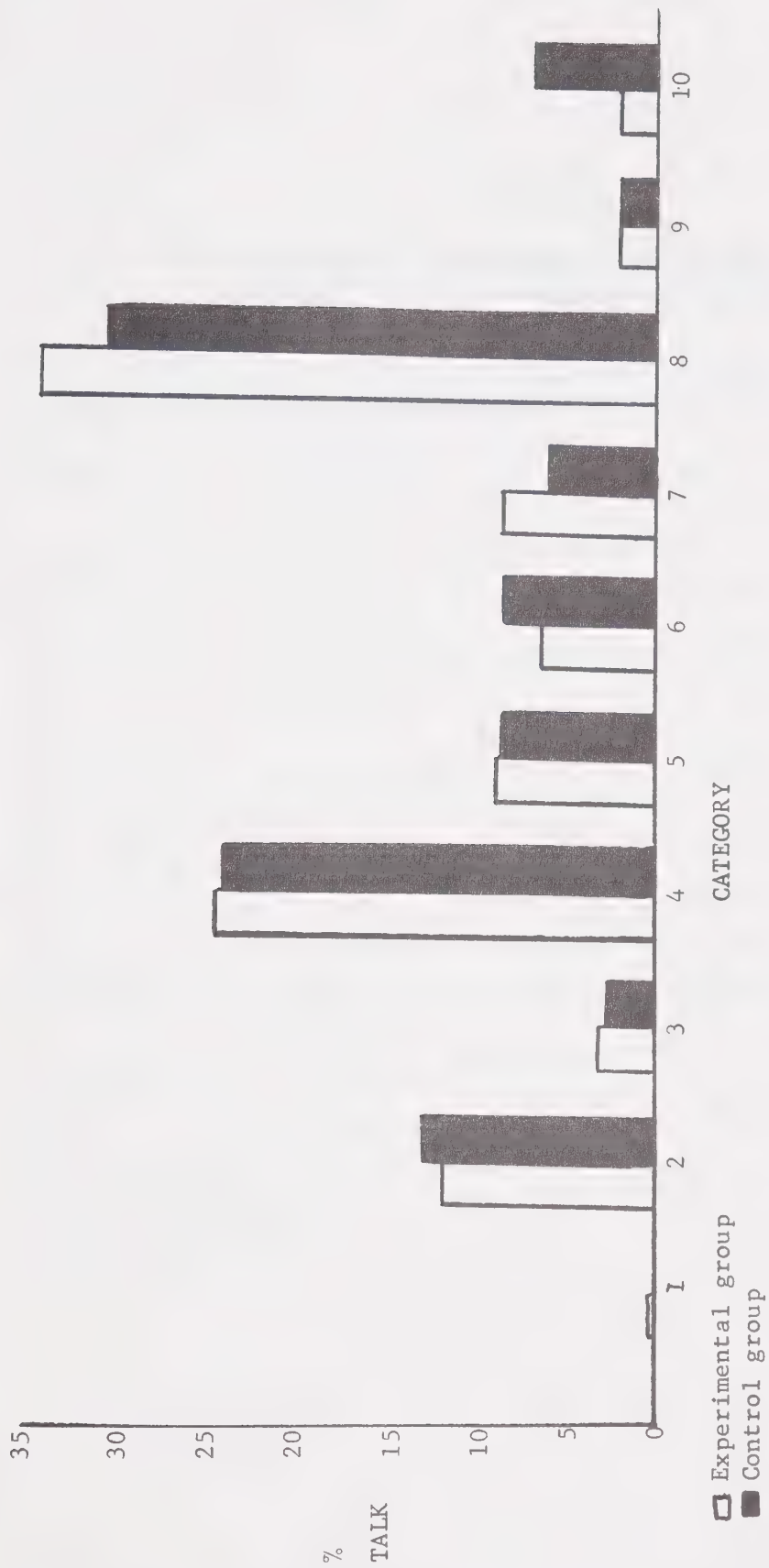


Figure 11

Comparison of Talk Distribution Between the Experimental and Control Groups Before the Treatment



TABLE IX  
COMPARISON OF THE EXPERIMENTAL AND CONTROL GROUPS ON  
ISOLATED CELLS AND AREAS OF THE MATRIX BEFORE  
THE TREATMENT

| Index    | Experimental<br>group<br>% | Control<br>group<br>% | difference | df | $\chi^2$ | p    |
|----------|----------------------------|-----------------------|------------|----|----------|------|
| e. i. i. | .50                        | .30                   | .20        | 1  | 1.62     | .20  |
| e. d. i. | .80                        | 1.00                  | .20        | 1  | .92      | .34  |
| v. c.    | 1.20                       | 1.70                  | .50        | 1  | 5.16     | .02  |
| 3-3 cell | .00                        | .00                   | .00        | 1  | .23*     | .63  |
| 9-9 cell | .20                        | .20                   | .00        | 1  | .09      | .77  |
| t. t.    | 62.30                      | 61.30                 | 1.00       | 1  | 1.54     | .21  |
| s. t.    | 34.80                      | 32.60                 | 2.20       | 1  | 7.26     | .007 |

\* corrected for continuity

e. i. i. extended indirect influence  
e. d. i. extended direct influence  
v. c. vicious circle  
t. t. teacher talk  
s. t. student talk



teachers accounted for approximately one half of all the tallies constituting the vicious circle index (58/112) for the control group.

Hypothesis 2.0 refers to the comparison of the two groups after the treatment. It is restated here as follows:

H 2.0 There is no significant difference between the experimental group and the control group with respect to post-treatment behavior on the following indices:

- 2.1 I/D ratio
- 2.2 revised i/d ratio
- 2.3 i/d row 8
- 2.4 i/d rows 8 and 9
- 2.5 extended i/d
- 2.6 extended indirect influence
- 2.7 extended direct influence
- 2.8 vicious circle
- 2.9 3-3 cell
- 2.10 9-9 cell
- 2.11 teacher talk
- 2.12 student talk

The results for sub-hypotheses 2.1 to 2.5 are presented in Table X. The first sub-hypothesis was the only one not rejected. Sub-hypotheses 2.2 to 2.5 were rejected at the 0.001 level of significance. As the control and experimental groups were evenly matched for different activities the question becomes: which activities were involved? It was observed that whereas the control group made equal use of the second step of transposition and the third and fourth steps in terms of frequency at the beginning of the experiment, it used eleven activities of the second step and only four of the higher third and fourth steps of transposition after the experiment. The experimental group, however, made less frequent use of step two activities and more frequent use of steps three and four of transposition (6 as compared to 9, respectively). This might suggest that the training sessions which constituted the





TABLE X  
COMPARISON OF THE EXPERIMENTAL AND CONTROL  
GROUPS AFTER THE TREATMENT

| ratio         | experimental<br>group | control<br>group | difference | z     | p     |
|---------------|-----------------------|------------------|------------|-------|-------|
| I/D           | .662                  | .647             | .015       | 1.409 | n.s.  |
| revised i/d   | .633                  | .553             | .080       | 5.143 | <.001 |
| i/d row 8     | .737                  | .655             | .082       | 4.695 | <.001 |
| i/d rows 8, 9 | .732                  | .657             | .075       | 4.557 | <.001 |
| extended i/d  | .693                  | .244             | .449       | 6.369 | <.001 |



treatment provided the teachers of the experimental group with the basis for the modification of their behavior in the desired manner, i.e., allowing their students more freedom and initiation in their use of the target language, as compared to teachers who did not receive the training.

It may be that teachers tend to use more step two activities of transposition as the year progresses if they are not aware of the effect their teaching has on the students. Step two of the transpositional phase is more rigid and mechanical than steps three and four which allow students a greater amount of freedom in the choice of answer.

Table XI presents the results of the analysis of sub-hypotheses

TABLE XI

COMPARISON OF THE EXPERIMENTAL AND CONTROL GROUPS ON  
ISOLATED CELLS AND AREAS OF THE MATRIX AFTER  
THE TREATMENT

| Index    | experimental<br>group<br>% | control<br>group<br>% | difference | df | $\chi^2$ | p     |
|----------|----------------------------|-----------------------|------------|----|----------|-------|
| e. i. i. | 1.60                       | .30                   | 1.30       | 1  | 68.58    | <.001 |
| e. d. i. | .70                        | .80                   | .10        | 1  | .56      | .45   |
| v. c.    | 1.10                       | 1.40                  | .30        | 1  | 3.42     | .06   |
| 9-9 cell | 3.20                       | .40                   | 2.80       | 1  | 156.30   | <.001 |
| 3-3 cell | .40                        | .00                   | .30        | 1  | 28.12    | <.001 |
| t. t.    | 57.30                      | 60.30                 | 3.00       | 1  | 13.20    | <.001 |
| s. t.    | 39.70                      | 34.70                 | 5.00       | 1  | 37.12    | <.001 |



2.6 to 2.12. These sub-hypotheses were rejected at the 0.001 level of significance with the exception of 2.7 and 2.8. The training would not appear to have affected the amount of extended direct influence and the vicious circle.

The experimental group used significantly more indirect influence than the control group. As well, the experimental group developed the use of some 3-3 procedures which accounted for 0.40 percent of the total matrix. This percentage seems related to the 9-9 cell which also increased to 9.0 percent of the total matrix for the experimental group after the treatment. As the students started to develop their own résumés and descriptions, the teacher seems to have encouraged them by summarizing and applying what they had said. When the students started to use recurring 9's in their recollections of their own lives and activities, the teacher's use of sustained 3's often indicated that the teacher was comparing one student's answer with another, recalling what another student had said about it, and conceptualizing the idea. Under these conditions, the students started to talk more, with more of their talk in the self-initiated category. As students talked more, the teachers began to listen and talked less than they had before the treatment.

Figure 12 presents a histogram of the category distribution for the two groups after the treatment. It presents the apparent emphasis of the experimental group on the emerging quality of interaction in the sense that the use of student ideas has become more prominent and that student talk has been redistributed from primarily response-oriented to initiation-oriented patterns.

Hypotheses 1.0 and 2.0 have dealt with the effect of the treatment



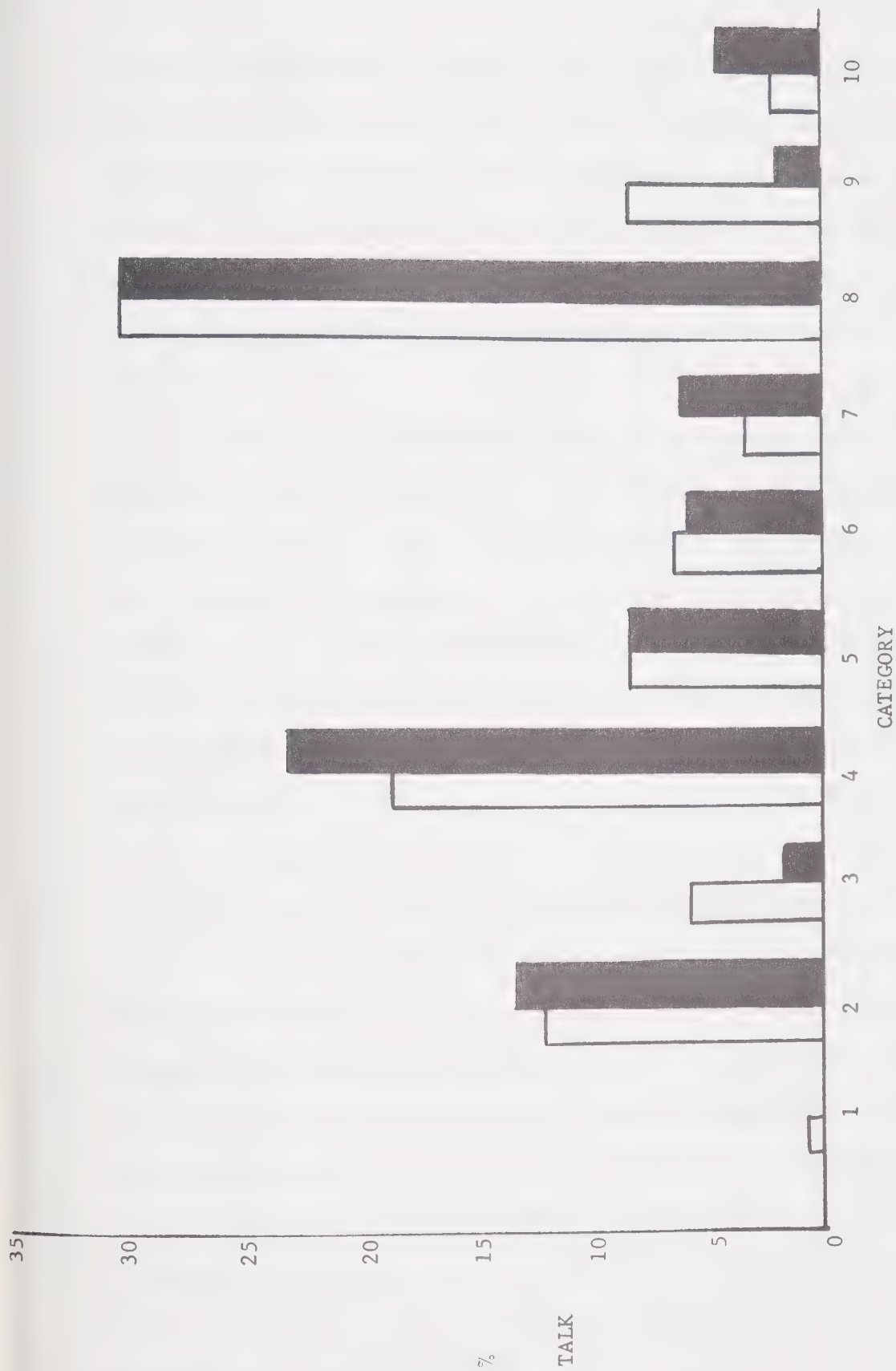


Figure 12  
Comparison of Talk Distribution Between the Experimental and Control Groups After the Treatment





on the two groups when compared. The results have indicated that the two groups began the experiment with fairly similar behavior patterns. Initially the control group used a somewhat greater variety of transpositional steps although neither group used all of the five steps included in the study. The experimental group did not use the T3b (résumé) step and the control group did not use the T2b (description) step.

After the treatment both groups were found to use an equal amount of steps of transposition (15). The level of significance of 0.001 was chosen to reject the null hypothesis to minimize the possibility that individual idiosyncracies were misinterpreted as the training effect. All but three sub-hypotheses, namely those referring to the use of the I/D ratio, the extended direct influence, and the vicious circle index, were rejected at the 0.001 level of confidence after the experiment.

The I/D ratio is a measure of total teacher talk. It may be that it is not sensitive enough to detect subtle differences in teacher behavior as the ratio includes the presentation of subject matter (categories 4 and 5). The observation that the revised i/d ratios changed significantly would suggest that the experimental teachers increased their use of motivating behaviors (categories 1, 2, and 3) as compared to their use of controlling behaviors (categories 6 and 7).

As a group, the experimental teachers did not exercise significantly different amounts of extended direct influence or the vicious circle, from that exercised by the control group. No apparent explanation seemed to be evident for this result. It may tentatively be



suggested that since such a small percentage of the actual amount of interaction refers to these two indices, it is difficult to decrease them further.

The proportion of talk distributed among the categories as compared on the two occasions for the two groups demonstrated that the experimental teachers did change. On the occasion of the pre-treatment observations, the two groups presented very similar talk distribution. After the treatment, the experimental group accepted the ideas of the students more, questioned less, criticized less, and had more self-initiated student talk than the control group.

In terms of actual teaching behavior, the most commonly occurring pattern for both groups was a 4-8-2-4-8-7-8 pattern. After the treatment this pattern remained for the control teachers but the experimental teachers demonstrated a 4-8-2-4-8-8-3 pattern. The experimental teachers were no longer as concerned with criticizing student answers as with having the students talk for a longer period of time. The teachers then used the student's ideas.

The rejection of the second hypothesis may lead one to conclude that the treatment did alter the behavior of the experimental group as demonstrated by the significant changes measured by the sub-hypotheses, as well as the change in category distribution and teaching pattern.

#### GROUP BEHAVIOR MODIFICATION

Hypotheses 3.0, 4.0, and 5.0 refer to the two groups individually in terms of behavior modification over a period of time. As a result



of the rejection of hypothesis 2.0, a six-week delayed post-treatment observation of the experimental group was included as part of the study in order to determine whether or not the training effect would still exist at that time.

Hypothesis 3.0 refers to the comparison of the pre- and post-treatment measures of the control group which received no training during the experiment. The hypothesis is restated:

H 3.0 There is no significant difference between the pre- and post-treatment behavior of the control group on the following indices:

- 3.1 I/D ratio
- 3.2 revised i/d ratio
- 3.3 i/d row 8
- 3.4 i/d rows 8 and 9
- 3.5 extended i/d
- 3.6 extended indirect influence
- 3.7 extended direct influence
- 3.8 vicious circle
- 3.9 3-3 cell
- 3.10 9-9 cell
- 3.11 teacher talk
- 3.12 student talk

The results of sub-hypotheses 3.1 to 3.5 are presented in Table XII. None of these sub-hypotheses were rejected. In each of the sub-hypotheses there appeared to be a slight increase in the post-treatment ratio, with 3.2 reaching the 0.05 level of significance. This may be attributable partially to teacher 101 who taught her second lessons differently. It may be that her teaching style was affected since she had not taught the class for two weeks during which time a student teacher was in charge of the class. Thus, when teacher 101 took over the class specifically for the purpose of this study, her behavior may not have been as expected if she had taught during the entire period of time.



TABLE XII  
COMPARISON OF PRE- AND POST-TREATMENT  
RATIOS OF THE CONTROL GROUP

| ratio         | pre-<br>treatment | post-<br>treatment | difference | z      | p    |
|---------------|-------------------|--------------------|------------|--------|------|
| I/D           | .636              | .647               | .011       | -1.047 | n.s. |
| revised i/d   | .516              | .553               | .037       | -2.356 | n.s. |
| i/d row 8     | .632              | .655               | .023       | -1.330 | n.s. |
| i/d rows 8, 9 | .629              | .657               | .028       | -1.659 | n.s. |
| extended i/d  | .250              | .244               | .006       | 0.089  | n.s. |





Table XIII presents the results for sub-hypotheses 3.6 to 3.12. It might be noted that the 9-9 cell index has changed more than the other indices. This may be attributable to the possibility that as the students knew one another better they started to help one another with answers. The student talk index increased largely as a result of teacher 105 who had made use of a tape recorder during the first observation period. During the second observation period, teacher 105 conducted a standard T2a (manipulation) using no tape recorder and her student talk went up significantly ( $p = 0.002$ ).

TABLE XIII

COMPARISON OF PRE- AND POST-TREATMENT MEASURES ON ISOLATED CELLS AND AREAS OF THE CONTROL GROUP

| index    | pre-<br>treatment<br>% | post-<br>treatment<br>% | difference | df | $\chi^2$ | p   |
|----------|------------------------|-------------------------|------------|----|----------|-----|
| e. i. i. | .30                    | .30                     | .00        | 1  | .56      | .46 |
| e. d. i. | 1.00                   | .80                     | .20        | 1  | 1.24     | .27 |
| v. c.    | 1.70                   | 1.40                    | .30        | 1  | 1.58     | .21 |
| 3-3 cell | .00                    | .00                     | .00        | 1  | .42*     | .52 |
| 9-9 cell | .20                    | .40                     | .20        | 1  | 3.56     | .06 |
| t. t.    | 61.30                  | 60.30                   | 1.00       | 1  | 1.24     | .26 |
| s. t.    | 32.60                  | 34.70                   | 2.10       | 1  | 6.64     | .01 |

\* corrected for continuity



The category distribution for the pre- and post-treatment talk of the control teachers was very similar. Categories 8 and 10 showed the greatest amount of change, the former increasing and the latter decreasing proportionally. This is attributed to teacher 105 who had used the tape recorder during the pre-treatment observation period. Figure 13 presents the talk distribution for the control group comparing the pre- and post-treatment observation periods. The teaching pattern, found to be a 4-8-2-4-8-7-8 on the occasion of the pre-treatment observation, remained the same after the treatment.

The assumption that teacher behavior is fairly constant over a period of time if no training in behavior identification and modification is provided seems to have been supported in the present study.

Hypothesis 4.0 deals with the experimental group and how its post-treatment compared with its pre-treatment behavior. The experimental group received twelve hours of instruction in interaction analysis over the period of one month. The hypothesis is restated:

H 4.0 There will be no significant difference between the pre- and post-treatment behavior of the experimental group on the following indices:

- 4.1 I/D ratio
- 4.2 revised i/d ratio
- 4.3 i/d row 8
- 4.4 i/d rows 8 and 9
- 4.5 extended i/d
- 4.6 extended indirect influence
- 4.7 extended direct influence
- 4.8 vicious circle
- 4.9 3-3 cell
- 4.10 9-9 cell
- 4.11 teacher talk
- 4.12 student talk

The results of sub-hypotheses 4.1 to 4.5 are presented in



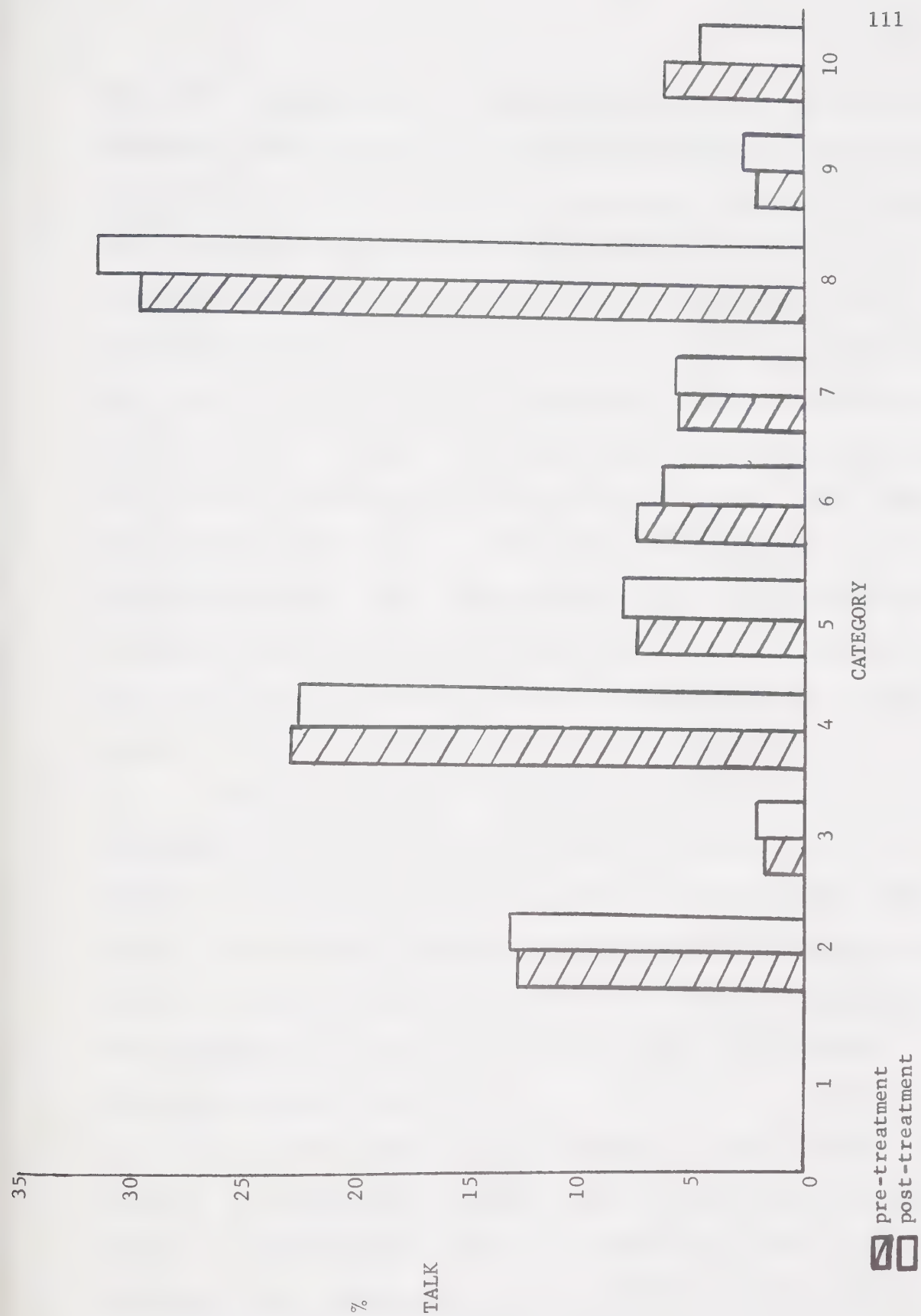


Figure 13

Comparison of Talk Distribution Before and After the Treatment for the Control Group



Table XIV. Sub-hypothesis 4.1 was different beyond the 0.01 level of confidence however not at the level chosen for rejection. As Voix et Images de France is primarily a question-oriented program, the frequency distribution of category 4 cells will generally be higher than the category 5 (lecture) cells. This results in an I/D ratio which is fairly high to start with. The I/D ratio is not as discriminatory as the revised i/d ratio because it includes all the cells of teacher talk. Because of VIF's seemingly high content orientation, this ratio seems to be unable to discriminate differences in individual cells. The other four sub-hypotheses reported in Table XV were all rejected at the 0.001 level of confidence. This would seem to suggest that the group had benefitted from the training and that the teachers in it had modified their behavior in a positive direction as demonstrated by the higher ratios.

Table XV presents the results of sub-hypotheses 4.6 to 4.10. These were all rejected at the 0.001 level of confidence with the exception of the vicious circle index and the extended direct influence index. Neither of these latter two indices changed significantly from the pre-treatment to the post-treatment observation, although both did decrease slightly, suggesting a decrease in the use of extended controlling teacher behaviors.

The greatest amount of change appears to have occurred in the 9-9 cell. The experimental teachers started to make use of a greater variety of transpositional activities concentrating more on the third and fourth levels. This allows the students to participate in more self-initiated talk than does the second level of transposition in which





TABLE XIV  
COMPARISON OF PRE- AND POST-TREATMENT  
RATIOS OF THE EXPERIMENTAL GROUP

| ratio         | pre-<br>treatment | post-<br>treatment | difference | z      | p     |
|---------------|-------------------|--------------------|------------|--------|-------|
| I/D           | .629              | .662               | .033       | -3.058 | n.s.  |
| revised i/d   | .510              | .633               | .123       | -7.794 | <.001 |
| i/d row 8     | .577              | .737               | .160       | -8.828 | <.001 |
| i/d rows 8, 9 | .583              | .732               | .149       | -8.749 | <.001 |
| extended i/d  | .360              | .693               | .333       | -4.953 | <.001 |

TABLE XV  
COMPARISON OF PRE- AND POST-TREATMENT  
INDICES OF THE EXPERIMENTAL GROUP

| index    | pre-<br>treatment<br>% | post-<br>treatment<br>% | difference | df | $\chi^2$ | p     |
|----------|------------------------|-------------------------|------------|----|----------|-------|
| e. i. i. | .50                    | 1.60                    | 1.10       | 1  | 41.63    | <.001 |
| e. d. i. | .80                    | .70                     | .10        | 1  | .77      | .38   |
| v. c.    | 1.20                   | 1.10                    | .10        | 1  | .64      | .43   |
| 3-3 cell | .00                    | .40                     | .40        | 1  | 21.28    | <.001 |
| 9-9 cell | .20                    | 3.20                    | 3.00       | 1  | 172.59   | <.001 |
| t. t.    | 62.30                  | 57.30                   | 5.00       | 1  | 34.91    | <.001 |
| s. t.    | 34.80                  | 39.70                   | 4.90       | 1  | 34.18    | <.001 |



the teacher more tightly controls the classroom activities.

It might be noted that the 3-3 cell, which is usually associated with the 9-9 cell did not increase to the same extent as the 9-9 cell although it did increase significantly as well. This may suggest that it is more difficult to learn to integrate the student's ideas into a teacher's behavior pattern than it is to produce situations in which the student can feel free to initiate his own ideas. The use of students' ideas does not seem to be part of a VIF teacher's regular teaching repertoire. The results of this study would suggest that it is one behavior which a teacher must learn to use.

The control teachers who also made use of higher level transpositional activities did not correspondingly increase their students' use of the 9-9 cell, suggesting that it was the training and not the phase itself which accounted for the difference. If teachers are not trained to stimulate self-initiated student talk, they do not seem to do so. Rather, they carry on interaction in the upper levels of transposition as in the lower levels, namely, by actively directing the interaction themselves. This does not seem to be conducive to self-initiated student talk.

Hypothesis 5.0, comparing the behavior of the experimental teachers six weeks after the conclusion of the training program with the post-treatment behavior, is restated:

H 5.0 There is no significant difference between the post- and delayed post-treatment behavior of the experimental group on the following indices:

- 5.1 I/D ratio
- 5.2 revised i/d ratio
- 5.3 i/d row 8



- 5.4 i/d rows 8 and 9
- 5.5 extended i/d
- 5.6 extended indirect influence
- 5.7 extended direct influence
- 5.8 vicious circle
- 5.9 3-3 cell
- 4.10 9-9 cell
- 4.11 teacher talk
- 5.12 student talk

The delayed post-treatment observations occurred six weeks after the previous set of observations and were conducted in the same manner as the two earlier observations. During this period the experimental teachers received no further training.

The results of sub-hypotheses 5.1 to 5.5 are reported in Table XVI. The experimental teachers further modified their behavior with

TABLE XVI  
COMPARISON OF POST- AND DELAYED POST-TREATMENT  
RATIOS FOR THE EXPERIMENTAL GROUP

| ratio         | post-treatment | delayed post-treatment | difference | z      | p     |
|---------------|----------------|------------------------|------------|--------|-------|
| I/D           | .662           | .694                   | .032       | -2.901 | n.s.  |
| revised i/d   | .633           | .709                   | .076       | -4.987 | <.001 |
| i/d row 8     | .737           | .757                   | .020       | -1.116 | n.s.  |
| i/d rows 8, 9 | .732           | .755                   | .023       | -1.414 | n.s.  |
| extended i/d  | .693           | .920                   | .227       | -5.837 | <.001 |



respect to two of the first five sub-hypotheses. Their i/d ratio measure increased, which would suggest that their influence on the students was due more to motivation than to control. Categories 1, 2, and 3 are considered positive in that they reinforce the student's contribution. Categories 6 and 7 are considered negative in that they restrict the students' activities either by actual teacher direction (category 6) or by criticism (category 7). The first three categories, when compared with the latter two categories, give an indication of relative motivation as compared to control by the teacher. The I/D ratio again changed beyond the 0.01 level of significance but not at the 0.001 level. The extended i/d ratio was significant beyond the 0.001 level of confidence. Whereas after the treatment there were two times as many extended indirect cell frequencies as compared to extended direct cell frequencies, six weeks later there were eleven times more of the former than of the latter. This further lends credence to the conjecture that the experimental teachers motivated rather than controlled their students.

Table XVII presents the results of the analysis of sub-hypotheses 5.6 to 5.12. Each of these sub-hypotheses was rejected at the 0.001 level of significance. It might be noted that the vicious circle index and the extended direct influence index, neither of which was rejected on the previous comparison, were both rejected at the 0.001 level of significance on this comparison. This may suggest that some behaviors require a greater amount of time to be changed than do others—in this instance, the behaviors of directing and criticizing students.

It might also be noted that these indices reflect a significant





TABLE XVII  
COMPARISON OF POST- AND DELAYED POST-TREATMENT  
INDICES FOR THE EXPERIMENTAL GROUP

| index    | post-<br>treatment<br>% | delayed post-<br>treatment<br>% | difference | df | $\chi^2$ | p     |
|----------|-------------------------|---------------------------------|------------|----|----------|-------|
| e. i. i. | 1.60                    | 3.50                            | 1.90       | 1  | 47.04    | <.001 |
| e. d. i. | .70                     | .30                             | .40        | 1  | 10.53    | <.001 |
| v. c.    | 1.10                    | .50                             | .60        | 1  | 15.53    | <.001 |
| 3-3 cell | .40                     | 1.10                            | .70        | 1  | 19.81    | <.001 |
| 9-9 cell | 3.20                    | 4.80                            | 1.60       | 1  | 22.10    | <.001 |
| t. t.    | 57.30                   | 53.40                           | 3.90       | 1  | 19.40    | <.001 |
| s. t.    | 39.70                   | 42.60                           | 2.90       | 1  | 10.94    | <.001 |



change from the post-treatment to the six week delayed post-treatment observation. This would suggest that the benefits accrued from the training start to manifest themselves early and continue to do so at a later period in time. If a teacher can positively modify his behavior after the training period and continue to do so six weeks later, what would his behavior be like in one year? How far is it possible to extend the positive behavior modification of a teacher given suitable training and the possibility of practising the newly-modified behavior?

A histogram representing the distribution of talk over the three sampling times is presented in Figure 14. Categories 1 (accepting feelings), 2 (praising), 5 (lecturing), and 10 (silence) exhibited negligible change on all three observations. Categories 3 (accepting ideas) and 9 (initiated student talk) increased on all three occasions. Category 8 (response-student talk) decreased from the pre- to the post-treatment period and then remained fairly stable on the delayed post-treatment observation. Categories 4 (questioning) and 7 (criticizing) both decreased dramatically from the pre- to the post-treatment observation and then continued to decrease somewhat on the delayed post-treatment observation. Category 6 (directing) remained stable from the pre- to the post-treatment observation and then decreased on the delayed post-treatment observation.

This would seem to suggest that either teacher perceptions of important behaviors change over a period of time or that behaviors have different maturation rates.

The major teaching pattern for the experimental group, as for



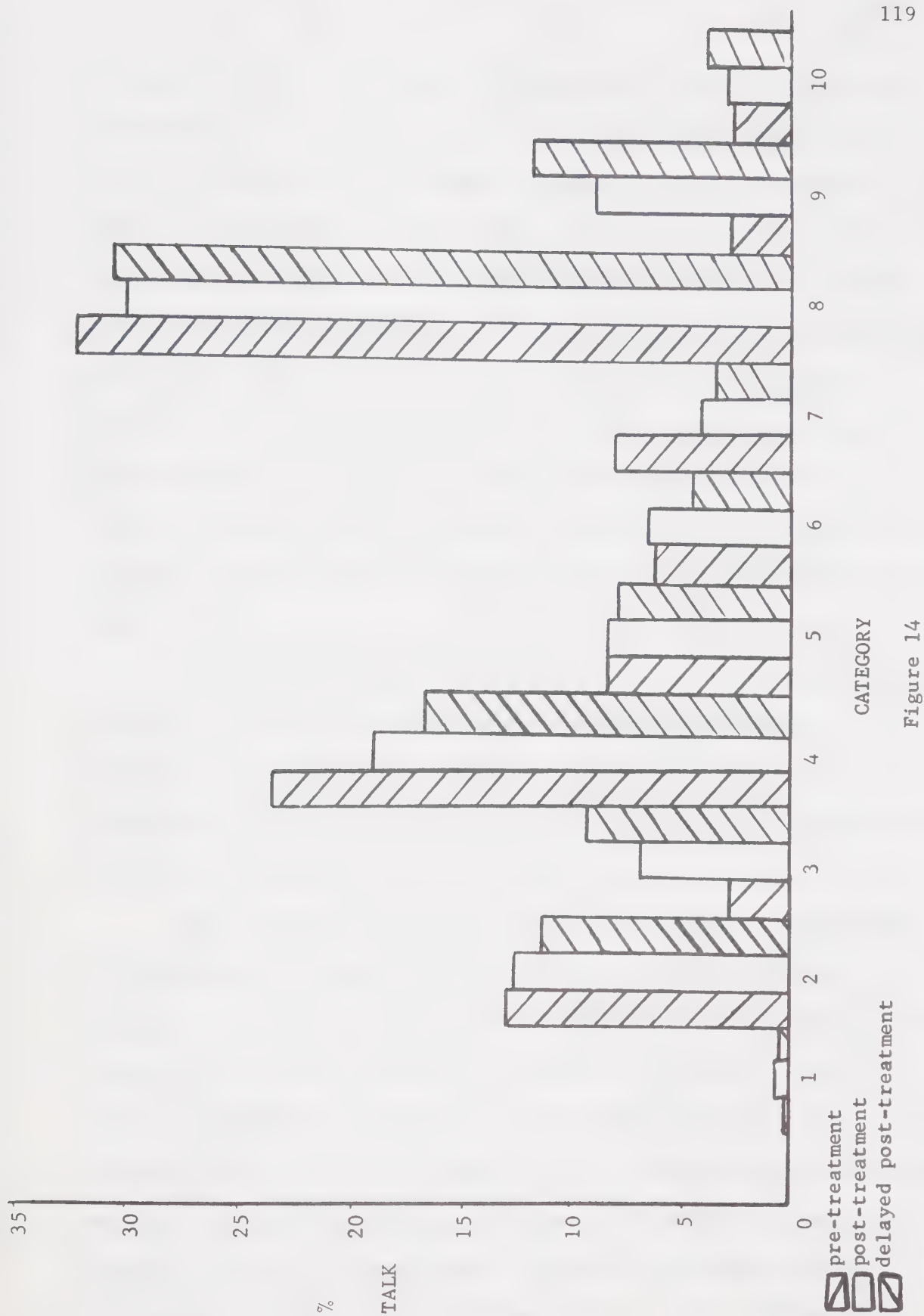


Figure 14

Comparison of Pre-, Post-, and Delayed Post-treatment Talk Distribution of the Experimental Group



the control group, was a 4-8-2-4-8-7-8 sequence before the treatment. This pattern did not change for the control teachers after the experiment. After the treatment the experimental teachers exhibited a revised 4-8-2-4-8-8-3 teaching pattern. This modified behavior was still in effect six weeks later. This revised teaching pattern reflects the seeming importance attributed by the experimental teachers to the more active involvement of the students in their learning activities. Criticism was displaced by the use of students' ideas which suggests not only attention to quantity of student participation but also its quality. This attention to quality is reflected by the increased use of student-initiated talk both immediately after the training and six weeks later.

This section has dealt with the effect of the treatment on the two groups. The control group received no training during the treatment whereas the experimental one received twelve hours of instruction in interaction accompanied by weekly feedback on behavior modification attempts.

Upon comparing the control group's behavior before and after the treatment, no significant differences at the 0.001 level of confidence were found. The behavior of the experimental group over the same period of time did change in a positive direction at the 0.001 level of confidence as reflected by the higher ratios and the increased use of motivating behaviors and decreased use of controlling behaviors. It was found that, upon comparison of the pre- and post-treatment indices, the experimental group had positively changed on all indices with the exception of the I/D ratio, the extended direct





influence index, and the vicious circle index. Upon comparison of the post-treatment measures with the delayed post-treatment measures all indices had further changed in the desired direction, at the 0.001 level of confidence or beyond, with the exception of the I/D ratio, the i/d ratio row 8, and the i/d ratio rows 8 and 9. Therefore, only the I/D ratio remained unchanged at the chosen significance level from one observation to the next. On the first comparison and the second comparison the results were significant at similar levels ( $0.001 > p < 0.01$ ).

The results of hypotheses 3.0, 4.0, and 5.0 would suggest that the twelve-hour training which constituted the treatment for the experimental group did produce measurable, positive changes in teacher behavior more in line with the stated objective of the VIF program, i.e., to stimulate learning conditions wherein the student can learn to produce novel spoken expressions for the purpose of communication. By providing conditions in which the student can freely express himself, without the constant threat of correction, the teacher is producing an atmosphere conducive to effective learning. The experimental teachers demonstrated the emerging development of such conditions. Further, the modification of teacher behavior toward this goal may continue even after the training itself is completed once the teacher has been exposed to some training in interaction analysis. This suggests that the training is only a beginning to a possible continuing program of self-evaluation by the teacher in terms of his perception and attainment of behavioral goals. Interaction analysis provides the teacher with a tool for this type of program.



## INDIVIDUAL BEHAVIOR MODIFICATION

Hypotheses 1.0 and 2.0 examined the differences between the control and experimental groups before and after the treatment. Hypotheses 3.0, 4.0, and 5.0 examined the differences of teacher behavior before and after the treatment for each of the two groups separately. Examined as well was the difference in teacher behavior between the post-treatment and a six week delayed post-treatment observation for the experimental group to determine the persistence of the training effect. Hypotheses 6.0, 7.0, and 8.0 deal with the difference in behavior for each individual teacher in both groups on each of the twelve indices. Since the sample of this experiment was very small, it appears advisable to report on each teacher and how he behaved throughout the experiment. No two individuals are alike. Therefore, it is important to report what each teacher actually did.

Hypothesis 6.0 dealt with the measures of teacher behavior before and after the treatment for each teacher in the control group. There was no training for this group. The hypothesis is restated:

H 6.0 There is no significant differences between the pre- and post-treatment behavior of each individual teacher in the control group on the following indices:

- 6.1 I/D ratio
- 6.2 revised i/d ratio
- 6.3 i/d row 8
- 6.4 i/d rows 8 and 9
- 6.5 extended i/d
- 6.6 extended indirect influence
- 6.7 extended direct influence
- 6.8 vicious circle
- 6.9 3-3 cell
- 6.10 9-9 cell
- 6.11 teacher talk
- 6.12 student talk



The results of the analysis for sub-hypothesis 6.1 are reported in Table XVIII. The three digit I.D. number starting with 100 refers to the control group. The last numbers are ordered from 1 to 5 according to the level of VIF teaching experience.

An I/D ratio of 0.50 means that for every indirect statement (categories 1 to 4) there is one direct statement (categories 5 to 7). The I/D ratios for each teacher, all over 0.50, are considerably different from the first observation to the second observation although none differed statistically at the chosen level of significance. It might be noted that initially the lowest I/D ratio was recorded for the

TABLE XVIII  
PRE- AND POST-TREATMENT I/D RATIOS FOR EACH  
TEACHER IN THE CONTROL GROUP

| I. D. | pre-<br>treatment | post-<br>treatment | difference | z      | p    |
|-------|-------------------|--------------------|------------|--------|------|
| 101   | .519              | .548               | .029       | -1.077 | n.s. |
| 102   | .639              | .617               | .022       | 0.057  | n.s. |
| 103   | .630              | .682               | .052       | -2.229 | n.s. |
| 104   | .668              | .687               | .019       | -0.826 | n.s. |
| 105   | .705              | .678               | .027       | 1.260  | n.s. |



teacher with the greatest amount of French teaching experience and that the highest I/D ratio was recorded for the teacher with the least teaching experience.

On the occasion of the second observation, the I/D ratio decreased for teachers 102 and 105, but increased for the other three teachers. Teachers 102 and 105 conducted only the T2a (manipulation) activity on both observation occasions. The variability of I/D ratios for the teachers was found to be less for the second series of observations. On the occasion of the post-treatment observation, teachers 103, 104 and 105 all exhibited twice as many indirect behaviors as direct behaviors as measured by the I/D ratio. At that time, teachers 101 and 102 had at least one indirect behavior for every direct behavior.

The results for sub-hypothesis 6.2 are presented in Table XIX. With the exception of teacher 101, individual teachers did not change significantly from the first to the second observation.

Teacher 101 is a special case as she had not taught the class in the experiment for two weeks because she had a student teacher. During the post-treatment observations, when she took over the class for purposes of the experiment, she drew on the blackboard what students told her to draw and wrote what they told her to write. This was classified as a T4a and a T2b activity although this does not constitute the regular activities of these two steps of transposition. As a result, teacher 101's behavior has demonstrated significant changes in the indirect areas of the matrix. The second series of observations





TABLE XIX

PRE- AND POST-TREATMENT REVISED i/d RATIOS FOR  
EACH TEACHER IN THE CONTROL GROUP

| I. D. | pre-<br>treatment | post-<br>treatment | difference | z      | p     |
|-------|-------------------|--------------------|------------|--------|-------|
| 101   | .365              | .515               | .150       | -3.740 | <.001 |
| 102   | .537              | .524               | .013       | 0.405  | n.s.  |
| 103   | .497              | .576               | .079       | -2.320 | n.s.  |
| 104   | .579              | .583               | .004       | -0.106 | n.s.  |
| 105   | .594              | .562               | .032       | 0.964  | n.s.  |



demonstrated that the presence of the student teacher teaching the class had interrupted teacher 101's usual teaching pattern. Since it was possible to ascribe the dramatic change in her behavior to the presence of the student teacher, teacher 101 was not eliminated from the study.

Table XX presents the results for sub-hypothesis 6.3. With the exception of teacher 101, the range of differences in the i/d ratio row 8 did not change markedly from the first to the second observation. Although none of the teachers changed significantly on this measure at the 0.001 level of confidence, they did demonstrate variability not only on the initial ratio but also on its change. Teachers 102 and 105 demonstrated decreased i/d ratios row 8 even though both conducted a T2a on all occasions of observation. Teachers 103 and 104 increased their ratios from the first to the second observation with the increase for teacher 103 being beyond the 0.01 level of confidence. This teacher conducted third and fourth level steps of transposition in which he did not control the students rigidly but rather allowed them some freedom in their *résumés* and descriptions.

Table XXI presents the results for sub-hypothesis 6.4. Notably, three teachers had decreased their i/d ratios rows 8 and 9 on the second observation as compared to the first. Teachers 101 and 103 increased their ratios beyond the 0.001 level of significance. The reason for the marked increase in teacher 101's indirect behavior pattern has already been suggested. Due to having a student teacher, she taught a fairly different lesson from what she had done previously. Teacher 103, however, increased his i/d rows 8 and 9 as he was conducting



TABLE XX

i/d ROW 8 FOR EACH TEACHER IN THE  
CONTROL GROUP

| I. D. | pre-<br>treatment | post-<br>treatment | difference | z      | p    |
|-------|-------------------|--------------------|------------|--------|------|
| 101   | .482              | .633               | .151       | -3.032 | n.s. |
| 102   | .634              | .621               | .013       | 0.380  | n.s. |
| 103   | .632              | .760               | .128       | -3.263 | n.s. |
| 104   | .660              | .664               | .004       | -0.099 | n.s. |
| 105   | .717              | .644               | .073       | 2.105  | n.s. |

TABLE XXI

i/d ROWS 8 AND 9 FOR EACH TEACHER  
IN THE CONTROL GROUP

| I. D. | pre-<br>treatment | post-<br>treatment | difference | z      | p     |
|-------|-------------------|--------------------|------------|--------|-------|
| 101   | .473              | .638               | .165       | -3.467 | <.001 |
| 102   | .636              | .620               | .016       | 0.468  | n.s.  |
| 103   | .625              | .777               | .152       | -4.100 | <.001 |
| 104   | .662              | .627               | .035       | 0.895  | n.s.  |
| 105   | .714              | .644               | .070       | 2.032  | n.s.  |



résumés and descriptions which were handled in such a manner as to allow students to elaborate answers. To this he in turn added praise.

It is noteworthy that on each of the first four sub-hypotheses, the range of ratio variability for the second observation as compared to the first observation decreased, clustering the ratios for the different teachers more closely together. This may suggest that teachers at the beginning of a new term tend to try new behaviors, but that as the semester progresses they tend to revert to a more stable teaching pattern.

Table XXII presents the results for sub-hypothesis 6.5. Three of the teachers demonstrated decreases in the extended i/d ratio.

TABLE XXII  
EXTENDED i/d RATIOS FOR EACH TEACHER  
IN THE CONTROL GROUP

| I. D. | pre-treatment | post-treatment | difference | z      | p    |
|-------|---------------|----------------|------------|--------|------|
| 101   | .192          | .563           | .371       | -2.477 | n.s. |
| 102   | .313          | .133           | .180       | 1.198  | n.s. |
| 103   | .421          | .277           | .144       | 0.996  | n.s. |
| 104   | .308          | .286           | .022       | 0.102  | n.s. |
| 105   | .000          | .000           | .000       | .000   | n.s. |





Teacher 105 demonstrated no use of extended indirect behavior on either observation period. Consequently, her ratio was 0.0. Teacher 101 was the only control teacher who increased her extended i/d ratio. This increase may be attributed to the presence of the student teacher which caused the atypical lesson taught on the second observation.

The control teachers demonstrated a tendency to repeat questions and directions for more than three seconds, accounting for build-ups in the 4-4 cell, and to a lesser degree the 6-6 cell. The teachers did not tend to do the same for any of the supportive 1 to 3 cells. Praise tended to be a perfunctory--"oui, bien, très bien." Teacher 103 did on occasion elaborate why he praised a student contribution, resulting in a comparatively high extended i/d on the first observation. He did not demonstrate this same type of behavior on the second observation. With this exception, the teachers generally tended to use between two and three times as many direct statements as indirect statements, resulting in the low extended i/d ratios. The use of praise or criticism without substantiation does not provide the student with any feedback on the "why" his answer has been praised or rejected. This can leave the student repeating a mistake indefinitely because he does not know what it is that he is saying that is not correct. Similarly if his answer is praised, he does not necessarily know why it is correct and may not exhibit this same correct verbal behavior on another occasion. If the teacher elaborates the praise or criticism the student can learn what it is that has been accepted or rejected and will perhaps incorporate this into his verbal behavior. Not only does the student answering benefit but the other class members do so as well.



However, if he receives no meaningful feedback, he will probably become more frustrated each time this occurs, which may be the cause of "turned off" students.

Table XXIII presents the results for the analysis of sub-hypothesis 6.6. Again, it is notable that the use of extended indirect influence decreased for each teacher with the exception of teacher 101. Teacher 105 was the only control teacher who did not make any use of extended indirect influence. The decrease in the use of extended indirect influence might suggest that teachers tend to become more mechanical in their use of praise and criticism as the semester progresses.

The results of sub-hypothesis 6.7 are presented in Table XXIV. This measure reflects considerable variability among the five teachers. Teacher 101 decreased her use of extended direct influence as would be expected because of her rather atypical post-treatment teaching behavior. Teacher 102 demonstrated no change on this index whereas teacher 103 increased his use of extended direct influence and teacher 104 decreased her use of this type of influence. Teacher 105 slightly increased her use of extended direct influence. Although the variations are small for all but teacher 101, it is notable that such variability occurred on this index. These results would appear to make it difficult to predict what would happen for a particular teacher on this measure.

Table XXV reports the results for sub-hypothesis 6.8. With the exception of teacher 103, the teachers decreased their vicious circle index. The variation of decrease varied from a probability level of 0.08 (not counting teacher 101) to 0.86. This seemingly general decrease



TABLE XXIII  
EXTENDED INDIRECT INFLUENCE FOR EACH  
TEACHER IN THE CONTROL GROUP

| I. D. | pre-<br>treatment<br>% | post-<br>treatment<br>% | difference | df | $\chi^2$ | p    |
|-------|------------------------|-------------------------|------------|----|----------|------|
| 101   | .40                    | .70                     | .30        | 1  | 0.94     | .33  |
| 102   | .40                    | .10                     | .30        | 1  | .88*     | .35  |
| 103   | .60                    | .50                     | .10        | 1  | .21      | .64  |
| 104   | .30                    | .10                     | .20        | 1  | .31      | .58  |
| 105   | .00                    | .00                     | .00        | 0  | .00      | 1.00 |

\* corrected for continuity

TABLE XXIV  
EXTENDED DIRECT INFLUENCE FOR EACH TEACHER  
IN THE CONTROL GROUP

| I. D. | pre-<br>treatment<br>% | post-<br>treatment<br>% | difference | df | $\chi^2$ | p    |
|-------|------------------------|-------------------------|------------|----|----------|------|
| 101   | 1.80                   | .60                     | 1.20       | 1  | 7.91     | .004 |
| 102   | .80                    | .80                     | .00        | 1  | .01      | .94  |
| 103   | .80                    | 1.20                    | .40        | 1  | 1.14     | .29  |
| 104   | .70                    | .40                     | .30        | 1  | 1.68     | .20  |
| 105   | 1.00                   | 1.10                    | .10        | 1  | .09      | .76  |



TABLE XXV  
VICIOUS CIRCLE FOR EACH TEACHER  
IN THE CONTROL GROUP

| I. D. | pre-<br>treatment<br>% | post-<br>treatment<br>% | difference | df | $\chi^2$ | p   |
|-------|------------------------|-------------------------|------------|----|----------|-----|
| 101   | 2.90                   | 1.50                    | 1.40       | 1  | 5.82     | .02 |
| 102   | 1.70                   | 1.60                    | .10        | 1  | .03      | .86 |
| 103   | 1.20                   | 2.00                    | .80        | 1  | 2.83     | .09 |
| 104   | 1.20                   | .60                     | .60        | 1  | 3.08     | .08 |
| 105   | 1.60                   | 1.50                    | .10        | 1  | .05      | .83 |





would suggest that once the teacher knows his students better, he no longer has to wait as long for an answer or compliance after giving a direction or criticizing the student. Teacher 103 waited longer than he had previously for a description or résumé in order to give the students time to think. On the occasion of the second observation, the students were hesitant at times, which resulted in the teacher restating a direction.

The results of sub-hypothesis 6.9 are reported in Table XXVI. This sub-hypothesis appears to be the one for which the index varies the least. Only two of the teachers had even 0.10 percent of their behavior on this index on one of the two observations. This strongly suggests that teachers do not make use of students' ideas as part of their regular classroom behavior repertoire unless they are instructed in their use.

Table XXVII reports the results of sub-hypothesis 6.10. With the exception of teacher 105 whose two matrices registered no use of the 9-9 cell on either observation, the other teachers showed an increase in this index. As the students got to know their teacher better, they tended to ask more unsolicited questions, which seems to have accounted for this growth. In the case of teacher 103, a sizable proportion of the observed increase was attributable to his students' occasional use of their own ideas for a description or résumé, i.e., a departure from the secretary technique. This is a technique whereby the class together makes up a description or résumé by focused questions asked by the teacher. The whole summary is then recalled by a secretary who has kept track of each sentence in the summary by memorizing it.



TABLE XXVI

3-3 CELL FOR EACH TEACHER IN THE CONTROL GROUP

| I. D. | pre-<br>treatment<br>% | post-<br>treatment<br>% | difference | df | $\chi^2$ | p    |
|-------|------------------------|-------------------------|------------|----|----------|------|
| 101   | .00                    | .10                     | .10        | 1  | .001*    | .98  |
| 102   | .00                    | .00                     | .00        | 0  | .00      | 1.00 |
| 103   | .00                    | .00                     | .00        | 0  | .00      | 1.00 |
| 104   | .10                    | .00                     | .10        | 1  | .004*    | .95  |
| 105   | .00                    | .00                     | .00        | 0  | .00      | 1.00 |

\* corrected for continuity

TABLE XXVII

9-9 CELL FOR EACH TEACHER IN THE CONTROL GROUP

| I. D. | pre-<br>treatment<br>% | post-<br>treatment<br>% | difference | df | $\chi^2$ | p    |
|-------|------------------------|-------------------------|------------|----|----------|------|
| 101   | .70                    | .90                     | .20        | 1  | .32      | .57  |
| 102   | .00                    | .10                     | .10        | 1  | .01*     | .95  |
| 103   | .30                    | .80                     | .50        | 1  | 3.57     | .06  |
| 104   | .20                    | .40                     | .20        | 1  | .36      | .55  |
| 105   | .00                    | .00                     | .00        | 0  | .00      | 1.00 |

\* corrected for continuity



The dearth of tallies in the 9-9 cell would suggest that VIF teachers in the present study follow the secretary technique of oral composition rather than allowing students to compose their own unguided oral compositions. Both groups made use of four instances of description or *résumé* yet it was only the experimental group which significantly changed its use of the 9-9 cell after the treatment, suggesting, therefore, that it was a result of the training that the encouragement of continuous spontaneous student talk occurred. This seems to have occurred along with an increased use of the 3-3 cell which specifies the teacher's acceptance of student ideas for more than three seconds.

It would seem that the development of the 3-3 cell and the 9-9 cell behaviors do not naturally exist in the regular teaching *répertoire* of a VIF teacher in the study. For these types of behaviors to be exhibited to any extent seems to require training in their recognition and in possible implementation strategies.

Table XXVIII reports the results for sub-hypothesis 6.11. It might be noted that in four out of five cases teacher talk decreased between the first and the second observation. This would suggest that as the semester progresses, the teacher talks somewhat less and, presumably, the students talk more. In the case of teacher 101, the percentage of talk she would normally use was reapportioned into the silence category (9.5 percent first observation, 13.9 percent second observation.) This was to be expected as she spent considerable time writing and drawing on the blackboard.

Teachers 102 and 103 did not change markedly in their use of



TABLE XXVIII  
TEACHER TALK FOR EACH TEACHER IN THE CONTROL GROUP

| I. D. | pre-<br>treatment<br>% | post-<br>treatment<br>% | difference | df | $\chi^2$ | p   |
|-------|------------------------|-------------------------|------------|----|----------|-----|
| 101   | 58.10                  | 54.00                   | 4.10       | 1  | 4.08     | .04 |
| 102   | 60.00                  | 59.70                   | .30        | 1  | .04      | .84 |
| 103   | 63.10                  | 61.10                   | 2.00       | 1  | 1.13     | .29 |
| 104   | 66.70                  | 62.70                   | 4.00       | 1  | 4.37     | .04 |
| 105   | 58.80                  | 63.20                   | 4.40       | 1  | 6.28     | .01 |





teacher talk. Teacher 104 changed her percentage of teacher talk, which was redistributed between the student talk categories. Approximately 1.0 percent was reapportioned into the silence category. Teacher 105 increased her use of teacher talk because during the first observation she had made use of a tape recorder which accounted for approximately one half of the 11.6 percent of tallies found in category 10. During the second observation there was only 2.0 percent of all interaction recorded in category 10. The other 9.6 percent of interaction was reapportioned to teacher talk and student talk. This accounted for the high degree of difference noted for the amounts of teacher and student talk on the post-treatment observation.

It would seem that as the students get to know their teachers better, they tend to talk somewhat more, which results in the teachers talking less. This suggests that it is very important to carefully scrutinize any decrease in teacher talk and subsequent increase in student talk as it may be a naturally occurring VIF phenomenon. In order for the training to have affected the proportions of teacher and student talk, a high degree of change would be necessary.

The results for sub-hypothesis 6.12 are reported in Table XXIX. As seen from the table, all teachers but teacher 101 increased in their amount of student participation. The reasons for each have been presented in the discussion of sub-hypothesis 6.11. One could tentatively predict that the amount of teacher talk decreases for VIF teachers and student talk increases as a result of knowing one another better.

Hypothesis 6.0 has demonstrated that there does exist variability



TABLE XXIX  
STUDENT TALK FOR EACH TEACHER IN THE CONTROL GROUP

| I. D. | pre-<br>treatment<br>% | post-<br>treatment<br>% | difference | df | $\chi^2$ | p    |
|-------|------------------------|-------------------------|------------|----|----------|------|
| 101   | 32.50                  | 32.10                   | .40        | 1  | .03      | .85  |
| 102   | 35.30                  | 36.70                   | 1.40       | 1  | .62      | .43  |
| 103   | 34.90                  | 35.70                   | .80        | 1  | .18      | .68  |
| 104   | 30.50                  | 33.50                   | 3.00       | 1  | 2.67     | .10  |
| 105   | 29.60                  | 34.80                   | 5.20       | 1  | 9.45     | .002 |



in individual teacher behavior on the twelve sub-hypotheses. Although the variation is not significant at the 0.001 level of confidence (with the exception of teachers 101 and 105 for the reasons explained) some changes occur around the 0.05 to 0.01 level of significance. This suggests that the duration of one month, with no particular treatment given, results in a certain amount of change due to circumstances which cannot be controlled. This would appear to justify choosing the 0.001 level of significance to determine whether or not training had an effect on the teaching behavior of the experimental teachers.

Table XXX presents the direction of change for each teacher in the control group on the twelve sub-hypotheses. The results seem to indicate that although differences between the pre- and post-treatment indices were not statistically significant at the 0.001 level of confidence, variation in individual behavior did occur. The variability of change for each teacher demonstrated does not seem to follow a set pattern, indicating that each teacher has his own particular pattern of interaction. This is exemplified by the different behavior patterns exhibited by the control teachers. The major behavior patterns before and after the experiment are presented in Table XXXI. These results seem to suggest that the VIF teachers do not use a great variety of typical patterns as these same patterns were exhibited by the experimental teachers before the treatment.

Hypothesis 7.0 refers to the amount of change for each teacher in the experimental group before and after the treatment.

H 7.0 There is no significant difference between the pre- and post-treatment behavior of each teacher in the experimental group on each of the following indices:



TABLE XXX

DIRECTION OF CHANGE BETWEEN PRE- AND POST-TREATMENT INDICES  
FOR EACH TEACHER IN THE CONTROL GROUP

| INDEX    | Teacher I. D. |      |      |     |      |
|----------|---------------|------|------|-----|------|
|          | 101           | 102  | 103  | 104 | 105  |
| I/D      | +             | -    | +    | +   | -    |
| i/d      | ++            | -    | +    | +   | -    |
| i/d 8    | +             | -    | +    | +   | -    |
| i/d 8, 9 | ++            | -    | ++   | -   | -    |
| ext. i/d | +             | -    | -    | -   | n.c. |
| e. i. i. | +             | -    | -    | -   | n.c. |
| e. d. i. | -**           | n.c. | +    | -   | +    |
| v.c.     | -             | -    | +    | -   | -    |
| 3-3 cell | +             | n.c. | n.c. | -   | n.c. |
| 9-9 cell | +             | +    | +    | +   | n.c. |
| t. t.    | -             | -    | -    | -   | +    |
| s. t.    | -             | +    | +    | +   | +*** |

\* &lt;.001

\*\* .004

\*\*\* .002

+ index increase

- index decrease

n.c. no change





TABLE XXXI  
BEHAVIOR PATTERN FOR EACH CONTROL TEACHER BEFORE  
AND AFTER THE TREATMENT

| I. D. | Pre-treatment | Post-treatment |
|-------|---------------|----------------|
| 101   | 4-8-2-4-8-7-8 | 4-8-2-4-8-4-8  |
| 102   | 4-8-2-4-8-7-8 | no change      |
| 103   | 4-8-2-4-4-8-7 | 4-8-2-4-4-8-4  |
| 104   | 4-8-2-4-4-8-7 | no change      |
| 105   | 4-8-2-4-8-7-8 | no change      |



- 7.1 I/D ratio
- 7.2 revised i/d ratio
- 7.3 i/d row 8
- 7.4 i/d rows 8 and 9
- 7.5 extended i/d
- 7.6 extended indirect influence
- 7.7 extended direct influence
- 7.8 vicious circle
- 7.9 3-3 cell
- 7.10 9-9 cell
- 7.11 teacher talk
- 7.12 student talk

The treatment for the experimental group consisted of twelve hours of instruction in interaction analysis and its application to the transpositional steps T2a to T4a of Voix et Images de France. For a description of these steps of transposition the reader is referred to p. 40.

Table XXXII presents the results of sub-hypothesis 7.1. Teachers 201 and 203 both registered a positive change beyond the 0.05 and 0.01 levels of significance, respectively, on the post-treatment observation as compared to the pre-treatment observation. None of the teachers, however, registered a change at the accepted 0.001 level of statistical significance for rejection of the sub-hypothesis. Teachers 202 and 205 also increased their post-treatment ratios, although not markedly. Teacher 204 decreased his I/D ratio after the treatment. It would seem that the training did not significantly affect the I/D ratio, which measures indirect versus direct behavior over all teacher talk categories. As VIF is quite content-oriented, there appears to be a marked effect of category 4 (questioning) considered to be indirect, on the I/D ratio. It is noted, however, that with the exception of teacher 202, all experimental teachers used about two indirect statements for every direct statement. Notable also is the tightening of the range among teachers



TABLE XXXII

I/D RATIO FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | pre-<br>treatment | post-<br>treatment | difference | z      | p    |
|-------|-------------------|--------------------|------------|--------|------|
| 201   | .615              | .661               | .046       | -2.037 | n.s. |
| 202   | .562              | .599               | .037       | -1.492 | n.s. |
| 203   | .608              | .683               | .075       | -2.940 | n.s. |
| 204   | .703              | .675               | .078       | 1.183  | n.s. |
| 205   | .666              | .692               | .026       | -1.085 | n.s. |



after the treatment on the I/D ratio.

Table XXXIII reports the results of sub-hypothesis 7.2. Teachers 201, 202, and 203 all increased their revised i/d ratios beyond the 0.001 level of confidence after the treatment. Teacher 204 also increased his post-treatment revised i/d ratio but not significantly while teacher 205 increased this ratio beyond the 0.01 level of significance. These results would appear to indicate that the training did affect the teachers' use of the primarily motivational categories (1 to 3) as compared to the primarily controlling categories (6 and 7). As was noted for the I/D ratio, the range of the post-treatment revised i/d ratio also became smaller.

TABLE XXXIII

REVISED i/d RATIO FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | pre-treatment | post-treatment | difference | z      | p     |
|-------|---------------|----------------|------------|--------|-------|
| 201   | .431          | .616           | .185       | -5.819 | <.001 |
| 202   | .460          | .590           | .130       | -3.725 | <.001 |
| 203   | .511          | .656           | .145       | -3.817 | <.001 |
| 204   | .687          | .701           | .014       | -0.386 | n.s.  |
| 205   | .526          | .620           | .094       | -2.676 | n.s.  |





Table XXXIV presents the results for sub-hypothesis 7.3.

Teachers 201 and 202 increased their post-treatment i/d ratio row 8 beyond the 0.001 level of confidence. Teachers 203 and 205 increased significantly at or beyond the 0.01 level of confidence on this ratio. While teacher 204 also increased his i/d ratio row 8, he did not do so to any great degree.

The first three sub-hypotheses present interesting results for teacher 204. In each instance his respective ratio was the highest for the entire group before the treatment. After the treatment in each case he registered no significant change. This result is true also for sub-hypotheses 7.4 and 7.5. This may suggest that this teacher already started the experiment with a high level of student motivation and therefore, did not feel it necessary to change the behaviors pertaining to the ratios, required more time to do so, felt that he did not wish to do so, or found it very difficult to improve them as they were already high.

Notably, the range of post-treatment scores on the i/d ratio row 8 for the experimental teachers became smaller. In each case, this ratio presents a situation wherein the teacher uses from two to three times as many indirect statements as direct statements in response to a student answer. This effect was not found for the control teachers.

Table XXXV reports the results of the analysis of sub-hypothesis 7.4. All the teachers increased their i/d ratios rows 8 and 9 after the treatment, with teachers 201, 202, and 203 doing so beyond the 0.001 level of confidence. Teacher 205 changed beyond the 0.01 level of confidence.



TABLE XXXIV

i/d ROW 8 FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | pre-treatment | post-treatment | difference | z      | p     |
|-------|---------------|----------------|------------|--------|-------|
| 201   | .471          | .757           | .286       | -8.251 | <.001 |
| 202   | .570          | .705           | .135       | -3.502 | <.001 |
| 203   | .639          | .761           | .122       | -2.579 | n.s.  |
| 204   | .695          | .749           | .054       | -1.234 | n.s.  |
| 205   | .602          | .713           | .111       | -2.894 | n.s.  |

TABLE XXXV

i/d ROWS 8 AND 9 FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | pre-treatment | post-treatment | difference | z      | p     |
|-------|---------------|----------------|------------|--------|-------|
| 201   | .471          | .758           | .287       | -8.446 | <.001 |
| 202   | .562          | .691           | .129       | -3.510 | <.001 |
| 203   | .645          | .798           | .153       | -3.716 | <.001 |
| 204   | .711          | .715           | .004       | -0.103 | n.s.  |
| 205   | .601          | .703           | .102       | -2.697 | n.s.  |



Table XXXVI presents the results for sub-hypothesis 7.5.

The positive change after the treatment reported for teachers 201 and 202 was not marked. The increase recorded for teacher 203 was almost significantly different at the 0.001 level of confidence. Teachers 204 and 205 both increased their post-treatment extended i/d ratios at or beyond the 0.01 level of significance. Although these changes are not statistically significant at the 0.001 level of confidence, nevertheless, the positive change in the ratio would appear to result from the training program as the control teachers (exception teacher 101) decreased their post-treatment scores on this extended i/d ratio.

The results of sub-hypothesis 7.6 are reported in Table XXXVII. Each experimental teacher again recorded increases on this extended indirect influence index after the treatment. Teachers 201 and 203 did not register a marked increase whereas teacher 202 increased her post-treatment use of extended direct influence at the 0.02 level of significance. Teachers 204 and 205 both significantly increased their use of post-treatment extended indirect influence beyond the 0.001 level of confidence.

Table XXXVIII presents the results for sub-hypothesis 7.7. The direction of change for this index on the post-treatment observation was not consistent for all the experimental teachers. As the amount of extended indirect influence used by the teachers increased, the corresponding decrease in the use of extended direct influence did not materialize. Only teacher 203 decreased her use of this index near the accepted level of confidence. Teacher 204 also somewhat decreased his use of his extended direct influence. Teachers



TABLE XXXVI

EXTENDED i/d RATIOS FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | pre-treatment | post-treatment | difference | z      | p    |
|-------|---------------|----------------|------------|--------|------|
| 201   | .167          | .412           | .245       | -1.404 | n.s. |
| 202   | .263          | .484           | .221       | -1.548 | n.s. |
| 203   | .393          | .833           | .440       | -3.224 | n.s. |
| 204   | .688          | .947           | .259       | -2.586 | n.s. |
| 205   | .214          | .650           | .436       | -2.806 | n.s. |

TABLE XXXVII

EXTENDED INDIRECT INFLUENCE FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | pre-treatment % | post-treatment % | difference | df | $\chi^2$ | p     |
|-------|-----------------|------------------|------------|----|----------|-------|
| 201   | .10             | .50              | .40        | 1  | 2.05     | .15   |
| 202   | .40             | 1.20             | .80        | 1  | 5.90     | .02   |
| 203   | .90             | 1.60             | .70        | 1  | 2.35     | .13   |
| 204   | .90             | 2.90             | 2.00       | 1  | 14.60    | <.001 |
| 205   | .20             | 2.10             | 1.90       | 1  | 19.56    | <.001 |





TABLE XXXVIII

EXTENDED DIRECT INFLUENCE FOR EACH TEACHER IN THE EXPERIMENTAL  
GROUP

| I. D. | pre-<br>treatment<br>% | post-<br>treatment<br>% | difference | df | $\chi^2$ | p    |
|-------|------------------------|-------------------------|------------|----|----------|------|
| 201   | .60                    | .70                     | .10        | 1  | .02      | .89  |
| 202   | 1.00                   | 1.30                    | .30        | 1  | .35      | .55  |
| 203   | 1.40                   | .30                     | 1.10       | 1  | 8.56     | .003 |
| 204   | .40                    | .20                     | .20        | 1  | .50      | .48  |
| 205   | .80                    | 1.10                    | .30        | 1  | .52      | .47  |



201, 202, and 205 all increased their use of extended direct influence after the treatment although not conspicuously.

This result may be due to the relatively minimal amount of extended direct influence that the experimental teachers used. Perhaps the teachers have reached an arbitrarily minimal level.

Table XXXIX presents the results for sub-hypothesis 7.8. These results are not too different from those of 7.7 which is of course closely related. Only teacher 203 changed her post-treatment vicious circle index significantly beyond the 0.001 level of confidence. Teacher 204 did not register any change at all from his pre-treatment vicious circle index. Teachers 201, 202, and 205 all increased this index on the post-treatment observation although not drastically.

It would appear that the training did not have any marked effect on the indices reported in sub-hypotheses 7.7 and 7.8, namely extended direct influence and vicious circle.

The results of sub-hypothesis 7.9 are presented in Table XL. These results prove equally noteworthy. Teacher 201 made no use of this index on either observation. Teacher 202 only slightly increased her use of this index and teacher 203 who had made slight use of this index on the pre-treatment observation did not change his post-treatment 3-3 cell index. Yet teachers 204 and 205 both increased their use of the 3-3 cell beyond the 0.001 level of confidence.

Given that training results in teacher use of student ideas there appear to be two possibilities for this result. It may be possible that teachers require greater practice in the use of the 3-3 cell index as it appears to be difficult to incorporate the use of



TABLE XXXIX  
VICIOUS CIRCLE FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | pre-<br>treatment<br>% | post-<br>treatment<br>% | difference | df | $\chi^2$ | p     |
|-------|------------------------|-------------------------|------------|----|----------|-------|
| 201   | .90                    | 1.10                    | .20        | 1  | .30      | .59   |
| 202   | 1.20                   | 1.60                    | .40        | 1  | .56      | .46   |
| 203   | 2.20                   | .60                     | 1.60       | 1  | 11.75    | <.001 |
| 204   | .60                    | .60                     | .10        | 1  | .21      | .64   |
| 205   | 1.40                   | 1.70                    | .30        | 1  | .40      | .53   |

TABLE XL  
3-3 CELL FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | pre-<br>treatment<br>% | post-<br>treatment<br>% | difference | df | $\chi^2$ | p     |
|-------|------------------------|-------------------------|------------|----|----------|-------|
| 201   | .00                    | .00                     | .00        | 0  | .00      | 1.00  |
| 202   | .10                    | .20                     | .10        | 1  | .01*     | .94   |
| 203   | .10                    | .10                     | .00        | 1  | .47*     | .49   |
| 204   | .00                    | 1.00                    | 1.00       | 1  | 12.55    | <.001 |
| 205   | .10                    | 1.00                    | .90        | 1  | 10.92    | <.001 |

\*corrected for continuity



student ideas into one's teaching *répertoire*. It is further possible that only two of the teachers felt that it was a necessary aspect of one's teaching behavior. Teacher 205's successful use of this index in a T2a (manipulation) suggests that the use of student ideas is not limited only to the third and fourth levels of transposition.

Table XLI reports the results of sub-hypothesis 7.10. Teachers 202, 203, and 204 all significantly increased in their incorporation of the 9-9 cell behavior into their teaching behavior beyond the 0.001 level of confidence. Teachers 201 and 205 also increased this index although not markedly. Teacher 201 made use of some 9-9 cell behaviors as a result of a strategy discussed in the training sessions--that of using a T3b (*résumé*) as an introduction to a day's transposition

TABLE XLI

9-9 CELL FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | pre-treatment | post-treatment | difference | df | $\chi^2$ | p     |
|-------|---------------|----------------|------------|----|----------|-------|
| 201   | .10           | .40            | .30        | 1  | 2.58*    | .11   |
| 202   | .10           | 3.10           | 3.00       | 1  | 31.02    | <.001 |
| 203   | .20           | 7.80           | 7.60       | 1  | 90.78    | <.001 |
| 204   | .90           | 5.10           | 4.20       | 1  | 36.92    | <.001 |
| 205   | .00           | .10            | .10        | 1  | .001*    | .98   |

\* corrected for continuity





rather than a T1b (retrouver le commentaire). No other examples of a 9-9 cell arose for teacher 201. Teacher 205 did not deviate from his T2a activities, yet managed to incorporate one example of extended self-initiated student talk into his teaching. This would suggest that perhaps his use of student ideas alone did not generate extended self-initiated student talk.

From the results of sub-hypotheses 7.9 and 7.10, it would seem to appear that the 3-3 cell and the 9-9 cell behaviors are not necessarily related in the VIF program. A teacher may significantly increase his 3-3 cell index and not his 9-9 cell index and vice versa. This may be due to the relatively restricted use the teachers of the experimental group made of the behaviors described by these indices. The incorporation of the 3-3 and 9-9 cell behaviors perhaps require more time to practice and internalize them.

Table XLII presents the results of the analysis of sub-hypothesis 7.11. Teachers 202 and 203 both significantly decreased their amount of teacher talk beyond the 0.001 level of confidence after the treatment. Teacher 204 also decreased his use of teacher talk at the 0.009 level of confidence. Teachers 201 and 205 both slightly increased their use of teacher talk. Because of the very high level of significance at which the teacher talk index was rejected for teachers 202 and 203 this would suggest that the result is due to the training and not to unforeseen external influences.

Table XLIII reports the results of sub-hypothesis 7.12. Teachers 202 and 203, who had significantly decreased their proportion of teacher talk, significantly increased their proportion of post-treatment student



TABLE XLII

TEACHER TALK FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | pre-<br>treatment<br>% | post-<br>treatment<br>% | difference | df | $\chi^2$ | p     |
|-------|------------------------|-------------------------|------------|----|----------|-------|
| 201   | 58.30                  | 58.70                   | .40        | 1  | .05      | .83   |
| 202   | 64.30                  | 56.00                   | 8.30       | 1  | 19.29    | <.001 |
| 203   | 66.70                  | 52.30                   | 14.40      | 1  | 51.45    | <.001 |
| 204   | 63.80                  | 58.70                   | 5.10       | 1  | 6.76     | .009  |
| 205   | 59.60                  | 60.20                   | .60        | 1  | .11      | .74   |

TABLE XLIII

STUDENT TALK FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | pre-<br>treatment<br>% | post-<br>treatment<br>% | difference | df | $\chi^2$ | p     |
|-------|------------------------|-------------------------|------------|----|----------|-------|
| 201   | 40.20                  | 39.90                   | .30        | 1  | .04      | .84   |
| 202   | 34.60                  | 41.90                   | 7.30       | 1  | 15.04    | <.001 |
| 203   | 30.90                  | 43.50                   | 12.60      | 1  | 41.14    | <.001 |
| 204   | 30.70                  | 36.50                   | 5.80       | 1  | 9.24     | .002  |
| 205   | 36.00                  | 36.80                   | .80        | 1  | .19      | .67   |



talk by almost the total amount of their decrease in teacher talk. Teacher 204 increased his student talk at the 0.002 level of confidence. Teacher 201 slightly decreased his post-treatment proportion of student talk, whereas teacher 205 slightly increased his proportion of student talk.

The results of hypothesis 7.0 are dramatically different from those of hypothesis 6.0. Whereas the former hypothesis demonstrated that considerable variability in individual teaching behavior exists, the latter has presented a more consistent pattern of individual teacher growth on the indices at the accepted 0.001 level of confidence. These fairly consistent results seem to be due to the training received by the members of the experimental group.

Table XLIV presents the direction of change between the pre- and post-treatment results for the members of the experimental group. These results are fairly consistent in that the direction of change is positive for supportive behaviors (as measured by indices .1-.6, .9, .10, .12) and negative for restrictive behaviors (measured by indices .7, .8, .11). It might be noted that variability of behavior change did occur among the five experimental teachers. Since all of the teachers did change significantly on some measures this might suggest that teachers consider different aspects of their behavior as those which need to be changed. It may also indicate that teachers require different amounts of time to assimilate new information and to internalize it effectively.

Another noteworthy point in the post-treatment results is that the two teachers who changed significantly on the greatest number of indices were both female. Whether their significantly positive behavior



TABLE XLIV

DIRECTION OF CHANGE BETWEEN PRE- AND POST-TREATMENT INDICES  
FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| Index    | Teacher I. D. |     |      |      |     |
|----------|---------------|-----|------|------|-----|
|          | 201           | 202 | 203  | 204  | 205 |
| I/D      | +             | +   | +    | -    | +   |
| i/d      | +             | +   | +    | +    | +   |
| i/d 8    | +             | +   | +    | +    | +   |
| i/d 8, 9 | +             | +   | +    | +    | +   |
| ext. i/d | +             | +   | +    | +    | +   |
| e. i. i. | +             | +   | +    | +    | +   |
| e. d. i. | +             | +   | -    | -    | +   |
| v. c.    | +             | +   | -    | n.c. | +   |
| 3-3 cell | n.c.          | +   | n.c. | +    | +   |
| 9-9 cell | +             | +   | +    | +    | +   |
| t. t.    | +             | -   | -    | -    | +   |
| s. t.    | -             | +   | +    | +    | +   |

\* &lt;.001

\*\* .003

\*\*\* .002





modification is partly attributable to sex or to some other uncontrolled factor cannot be determined as a result of this study.

Hypothesis 8.0 deals with the effect of the training six weeks after its conclusion. The purpose of this delayed post-treatment series of observations was to determine the level of retention of behavior change exhibited by the teachers on the post-treatment indices.

H 8.0 There is no significant difference between the post- and delayed post-treatment behavior of each individual teacher in the experimental group on the following indices:

- 8.1 I/D ratio
- 8.2 revised i/d ratio
- 8.3 i/d row 8
- 8.4 i/d rows 8 and 9
- 8.5 extended i/d
- 8.6 extended indirect influence
- 8.7 extended direct influence
- 8.8 vicious circle
- 8.9 3-3 cell
- 8.10 9-9 cell
- 8.11 teacher talk
- 8.12 student talk

The results of the analysis of sub-hypothesis 8.1 are presented in Table XLV. Only one teacher, 204, significantly increased his I/D ratio beyond the 0.001 level of confidence on the delayed post-treatment observation. The other experimental teachers (with the exception of teacher 202) increased their I/D ratios somewhat from the post-treatment observation. Teacher 203 increased her I/D ratio beyond the 0.05 level of confidence as compared to the post-treatment observation. These results would seem to indicate that the teachers had not stopped modifying their behavior in a positive way as indicated by the increased I/D ratios.

Table XLVI presents the results for sub-hypothesis 8.2. In each



TABLE XLV

I/D RATIO FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | post-treatment | delayed post-treatment | difference | z      | p     |
|-------|----------------|------------------------|------------|--------|-------|
| 201   | .661           | .689                   | .028       | -1.220 | n.s.  |
| 202   | .599           | .569                   | .030       | 1.138  | n.s.  |
| 203   | .683           | .742                   | .059       | -2.276 | n.s.  |
| 204   | .675           | .770                   | .095       | -4.026 | <.001 |
| 205   | .692           | .706                   | .014       | -0.580 | n.s.  |

TABLE XLVI

REVISED i/d RATIO FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | post-treatment | delayed post-treatment | difference | z      | p     |
|-------|----------------|------------------------|------------|--------|-------|
| 201   | .616           | .641                   | .025       | -0.801 | n.s.  |
| 202   | .590           | .629                   | .039       | -1.070 | n.s.  |
| 203   | .656           | .766                   | .110       | -3.122 | n.s.  |
| 204   | .701           | .855                   | .154       | -5.091 | <.001 |
| 205   | .620           | .648                   | .028       | -0.773 | n.s.  |



instance, the experimental teachers had increased their revised i/d ratios beyond the level of the post-treatment observations. Teacher 204 again changed his behavior as measured by the revised i/d ratio significantly beyond the 0.001 level of confidence. Teacher 203 also increased her ratio at almost the chosen level of confidence.

It is notable that teacher 204, who had not changed significantly on this measure on the post-treatment observation did so on the delayed post-treatment observation. As well, he changed significantly on the I/D ratio at this observation. This may suggest that this teacher, who began initially with very high ratios in proportion to the other experimental teachers, required more time to adapt his behavior than did the other teachers. Teacher 205 did not change significantly on either of these two post-treatment measures.

Table XLVII presents the results for sub-hypothesis 8.3. Whereas teachers 201 and 202 had significantly increased their post-treatment i/d ratio row 8, teacher 201 decreased slightly although not to the level of the pre-treatment score (.471), and teacher 202 increased her score slightly. The other three experimental teachers also increased their ratios but not significantly from the post-treatment level.

Table XLVIII reports the results of sub-hypothesis 8.4. Although none of the increases are significant, four of the experimental teachers increased their delayed post-treatment ratios beyond the post-treatment level. Teacher 204 did so at almost the 0.01 level of confidence. Teacher 201 decreased his ratio slightly but not beyond the pre-treatment level (.471).



TABLE XLVII

i/d ROW 8 FOR EACH TEACHER IN THE ~~EXPL~~IMENTAL GROUP

| I. D. | post-<br>treatment | delayed post-<br>treatment | difference | z      | p    |
|-------|--------------------|----------------------------|------------|--------|------|
| 201   | .757               | .744                       | .013       | 0.407  | n.s. |
| 202   | .705               | .756                       | .051       | -1.252 | n.s. |
| 203   | .761               | .787                       | .026       | -0.547 | n.s. |
| 204   | .749               | .807                       | .058       | -1.345 | n.s. |
| 205   | .713               | .721                       | .008       | -0.230 | n.s. |

TABLE XLVIII

i/d ROWS 8 AND 9 FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | post-<br>treatment | delayed post-<br>treatment | difference | z      | p    |
|-------|--------------------|----------------------------|------------|--------|------|
| 201   | .758               | .744                       | .014       | 0.447  | n.s. |
| 202   | .691               | .704                       | .013       | -0.359 | n.s. |
| 203   | .798               | .808                       | .010       | -0.264 | n.s. |
| 204   | .715               | .805                       | .090       | -2.505 | n.s. |
| 205   | .703               | .723                       | .020       | -0.517 | n.s. |





Table XLIX presents the results for sub-hypothesis 8.5. For each teacher, delayed post-treatment extended i/d ratios were increased beyond the post-treatment observation. Teacher 203 recorded an increase beyond the 0.01 level of confidence compared to her post-treatment extended i/d ratio. Teacher 204, who had increased this ratio beyond the 0.001 level of confidence on the post-treatment observation, increased his delayed post-treatment measure beyond the 0.05 level of confidence.

Notably teacher 204 had an extended i/d ratio of 1.00 which means that he had no extended direct influence at all on the delayed post-treatment observation. This is no small accomplishment as it means that he did not give extended directions or criticism. His vicious circle index was 0.0 as well.

Table L presents the results of sub-hypothesis 8.6. Teacher 204, who had increased this index significantly beyond the 0.001 level of confidence on the post-treatment observation again increased his use of extended indirect influence at the accepted level of statistical significance on the delayed post-treatment observation. Teacher 205, who had also changed significantly of the post-treatment extended indirect influence, decreased slightly but not to the level of the pre-treatment score (0.20). Teacher 203, who had not changed significantly on this index after the treatment, did so at the delayed post-treatment observation. Teachers 201 and 202 both increased their delayed post-treatment proportion of extended indirect influence but did not do so significantly on either observation period.

The results of sub-hypothesis 8.7 are presented in Table LI. All of the experimental teachers consistently decreased their use of



TABLE XLIX

EXTENDED i/d RATIO FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | post-<br>treatment | delayed post-<br>treatment | difference | z      | p    |
|-------|--------------------|----------------------------|------------|--------|------|
| 201   | .412               | .682                       | .270       | -1.686 | n.s. |
| 202   | .484               | .731                       | .247       | -1.893 | n.s. |
| 203   | .833               | .987                       | .154       | -3.049 | n.s. |
| 204   | .947               | 1.000                      | .053       | -2.284 | n.s. |
| 205   | .650               | .808                       | .158       | -1.380 | n.s. |

TABLE L

EXTENDED INDIRECT INFLUENCE FOR EACH TEACHER IN THE  
EXPERIMENTAL GROUP

| I. D. | post-<br>treatment<br>% | delayed post-<br>treatment<br>% | difference | df | $\chi^2$ | p     |
|-------|-------------------------|---------------------------------|------------|----|----------|-------|
| 201   | .50                     | 1.00                            | .50        | 1  | 2.96     | .09   |
| 202   | 1.20                    | 1.40                            | .20        | 1  | .34      | .56   |
| 203   | 1.60                    | 6.30                            | 4.70       | 1  | 35.17    | <.001 |
| 204   | 2.90                    | 7.60                            | 4.70       | 1  | 27.38    | <.001 |
| 205   | 2.10                    | 1.70                            | .40        | 1  | .46      | .50   |



TABLE LI  
EXTENDED DIRECT INFLUENCE FOR EACH TEACHER IN THE  
EXPERIMENTAL GROUP

| I. D. | post-<br>treatment<br>% | delayed post-<br>treatment<br>% | difference | df | $\chi^2$ | p   |
|-------|-------------------------|---------------------------------|------------|----|----------|-----|
| 201   | .70                     | .50                             | .20        | 1  | .52      | .47 |
| 202   | 1.30                    | .50                             | .80        | 1  | 3.89     | .05 |
| 203   | .30                     | .10                             | .20        | 1  | .79*     | .37 |
| 204   | .20                     | .00                             | .20        | 1  | .54*     | .46 |
| 205   | 1.10                    | .40                             | .70        | 1  | 4.14     | .04 |

\*corrected for continuity



extended direct influence on the delayed post-treatment observation. Teachers 203 and 204, who had decreased their use of this measure on the post-treatment measures (203 significantly so) had all but eliminated it on the final observation (204 did so completely). Teachers 202 and 205 decreased it at the 0.05 and 0.04 levels of confidence respectively.

This result would seem to indicate that to decrease or eliminate the use of extended direct influence requires a longer period of time than do some of the other behaviors being measured.

The results of Sub-hypothesis 8.8 are reported in Table LII.

TABLE LII  
VICIOUS CIRCLE INDEX FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | post-<br>treatment<br>% | delayed post-<br>treatment<br>% | difference | df | $\chi^2$ | p    |
|-------|-------------------------|---------------------------------|------------|----|----------|------|
| 201   | 1.10                    | .70                             | .40        | 1  | .92      | .34  |
| 202   | 1.60                    | .80                             | .80        | 1  | 2.98     | .08  |
| 203   | .60                     | .20                             | .40        | 1  | 1.77*    | .18  |
| 204   | .50                     | .00                             | .50        | 1  | 4.35*    | .04  |
| 205   | 1.70                    | .60                             | 1.10       | 1  | 6.83     | .008 |

\*corrected for continuity





As for sub-hypothesis 8.7, the teachers consistently decreased their use of vicious circle behaviors on the delayed post-treatment observation. This would suggest that the teachers do not consider either extended direct influence or vicious circle behaviors to be beneficial to the students. The fact that it required six weeks after the post-treatment observations to nearly eliminate them would suggest that these two behaviors are fairly difficult to modify.

During the training program, a possible strategy for eliminating the 6-6 cell was to refrain from issuing student directives twice, a seemingly common occurrence among VIF teachers.

Table LIII presents the results for sub-hypothesis 8.9. Teacher 203, who had not previously registered any change on the 3-3 cell index, increased it beyond the .001 level of confidence. Teacher 201, who had not a single tally in the 3-3 cell on the occasion of the

TABLE LIII

## 3-3 CELL INDEX FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | post-<br>treatment<br>% | delayed post-<br>treatment<br>% | difference | df | $\chi^2$ | p     |
|-------|-------------------------|---------------------------------|------------|----|----------|-------|
| 201   | .00                     | .30                             | .30        | 1  | 3.22*    | .07   |
| 202   | .20                     | .60                             | .40        | 1  | 2.33*    | .13   |
| 203   | .10                     | 2.90                            | 2.80       | 1  | 32.76    | <.001 |
| 204   | 1.00                    | 1.30                            | .30        | 1  | .71      | .40   |
| 205   | 1.00                    | .70                             | .30        | 1  | 1.11     | .29   |

\* corrected for continuity



pre- and post-treatment observations, increased his use of this cell at the 0.07 level of significance. Teachers 202 and 204 did not significantly increase their use of the behavior reported by this cell since the post-treatment observation. Teacher 205, who had significantly increased his use of this behavior on the post-treatment observation, had decreased slightly but not to the level of the pre-treatment observation (0.10).

This late-blooming increase for all teachers with the exception of teacher 205, would seem to suggest that this behavior required more than a month to practice and integrate it into one's teaching behavior.

Table LIV reports the results of sub-hypothesis 8.10. Teachers

TABLE LIV

9-9 CELL INDEX FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | post-treatment<br>% | delayed post-treatment<br>% | difference | df | $\chi^2$ | p     |
|-------|---------------------|-----------------------------|------------|----|----------|-------|
| 201   | .40                 | .10                         | .30        | 1  | 2.78*    | .13   |
| 202   | 3.10                | 5.60                        | 2.50       | 1  | 9.36     | .002  |
| 203   | 7.80                | 14.40                       | 6.60       | 1  | 26.35    | <.001 |
| 204   | 5.10                | 4.80                        | .30        | 1  | .08      | .77   |
| 205   | .10                 | .10                         | .00        | 1  | .48*     | .49   |

\* corrected for continuity



202 and 203, who had changed significantly on their proportion of 9-9 cell behavior on the post-treatment observation, did so again six weeks later. Teachers 201 and 204 reverted somewhat. (Teacher 201 reverted entirely to his pre-treatment measure whereas teacher 204 did not do so (0.10). Teacher 205 did not register any change from his post-treatment index.

As on the post-treatment scores, the highest 3-3 cell measures are not necessarily related to the highest 9-9 cell scores. Teacher 203 had the highest 3-3 cell score and the highest 9-9 cell score. However, teacher 202, who had the second highest 9-9 cell index had the fourth highest 3-3 cell index and teacher 204 who had the third highest 9-9 cell index had the second highest 3-3 cell index. This may suggest that past an optimal level, the variation between these two indices is no longer important.

Table IV presents the results of sub-hypothesis 8.11. All experimental teachers decreased their use of teacher talk on the delayed post-treatment observation. Teacher 201, who had slightly increased his proportion of teacher talk after the treatment, significantly decreased its use at the 0.001 level of confidence six weeks later. Teachers 202 and 203, who had significantly decreased their use of teacher talk on the post-treatment observation further decreased its use at the 0.03 and 0.04 levels, respectively. Teachers 204 and 205 only slightly decreased their proportion of teacher talk.

Table LVI presents the results for sub-hypothesis 6.12. Whereas all five teachers had decreased their delayed post-treatment talk, they similarly increased their proportion of student talk.



TABLE LV  
TEACHER TALK FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | post-<br>treatment<br>% | delayed post-<br>treatment<br>% | difference | df | $\chi^2$ | p    |
|-------|-------------------------|---------------------------------|------------|----|----------|------|
| 201   | 58.70                   | 52.90                           | 5.80       | 1  | 10.30    | .001 |
| 202   | 56.00                   | 51.70                           | 4.30       | 1  | 4.72     | .03  |
| 203   | 52.30                   | 48.10                           | 4.20       | 1  | 4.43     | .04  |
| 204   | 58.70                   | 56.90                           | 1.80       | 1  | .86      | .35  |
| 205   | 60.20                   | 57.60                           | 2.60       | 1  | 1.73     | .19  |

TABLE LVI  
STUDENT TALK FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| I. D. | post-<br>treatment<br>% | delayed post-<br>treatment<br>% | difference | df | $\chi^2$ | p   |
|-------|-------------------------|---------------------------------|------------|----|----------|-----|
| 201   | 39.90                   | 43.70                           | 3.80       | 1  | 4.63     | .03 |
| 202   | 41.90                   | 45.20                           | 3.30       | 1  | 2.82     | .09 |
| 203   | 43.50                   | 48.50                           | 5.00       | 1  | 6.09     | .01 |
| 204   | 36.50                   | 37.80                           | 1.30       | 1  | .50      | .48 |
| 205   | 36.80                   | 37.40                           | .60        | 1  | .09      | .76 |





Teachers 201, 202, and 203 all did so at around the 0.10 to 0.01 levels of confidence. Teachers 204 and 205 only slightly demonstrated increased proportions of student talk at the six week delayed post-treatment observation.

It might be noted that teacher 203 had slightly more student talk than teacher talk on the delayed post-treatment observation. Teacher and student talk percentages were also fairly similar for teachers 201 and 202.

The most noteworthy feature of hypothesis 8.0 seems to be that teachers varied considerably in their time of implementation of the training information. This would suggest that teachers assimilate information at different rates and in differing degrees of quality. Table LVII presents the results of the direction of change for each teacher on the delayed post-treatment indices.

It is noteworthy that consistent decreases for all experimental teachers were found on the restrictive behaviors measured by indices 7, 8, 11. This strongly suggests that the more controlling teacher behaviors of extended direct influence, vicious circle, and teacher talk require more time to change than do the positive motivating behaviors.

Teacher 203, who had changed significantly on six post-treatment indices, changed again on three indices at the chosen significance level. Two of these indices were new, and one was a further modification of an already positively modified behavior change. Teacher 204, who had changed his behavior as measured by three indices significantly between the pre- and post-treatment observation, further significantly increased his indices on one of these behaviors and on



TABLE LVII

DIRECTION OF CHANGE BETWEEN THE POST- AND DELAYED POST-TREATMENT  
INDICES FOR EACH TEACHER IN THE EXPERIMENTAL GROUP

| Index    | Teacher I. D. |     |     |     |      |
|----------|---------------|-----|-----|-----|------|
|          | 201           | 202 | 203 | 204 | 205  |
| I/D      | +             | -   | +   | +   | +    |
| i/d      | +             | +   | +   | +   | +    |
| i/d 8    | -             | +   | +   | +   | +    |
| i/d 8, 9 | -             | +   | +   | +   | +    |
| ext. i/d | +             | +   | +   | +   | +    |
| e. i. i. | +             | +   | +   | +   | -    |
| e. d. i. | -             | -   | -   | -   | -    |
| v. c.    | -             | -   | -   | -   | -    |
| 3-3 cell | +             | +   | +   | +   | -    |
| 9-9      | -             | +   | +   | -   | n.c. |
| t. t.    | -             | -   | -   | -   | -    |
| s. t.    | +             | +   | +   | +   | +    |

\*  $\leq .001$ 

\*\* .002



two new ones as measured by the delayed post-treatment indices. Teacher 202, who had significantly modified her behavior on six indices between the pre- and post-treatment observation, did not further modify her behavior at the chosen level of significance. Teacher 201 had modified his behavior on three indices on the pre-post comparison and on one more during the post-delayed post comparison. Teacher 205 modified his behavior significantly as measured by two indices on the first comparison. He did not demonstrate any further positive modifications on the final comparison. A summary of the total number of behavior changes as measured by the indices is reported in Table LVIII.

The behavior of the five experimental teachers also changed its major patterns. These are reported in Table LIX. In almost every case, the pattern changed dramatically from the first to the second and the second to the third observation periods. The variety of patterns provides further evidence that teachers integrate into their teaching behavior those patterns which they themselves see as the most important. Whereas initially the major pattern for each teacher was 4-8-2, the other two observations presented greater variety for each teacher. This seems to suggest that interaction analysis has provided the teachers with a tool with which they can develop a more personalized style of teaching. Since post-treatment behavior patterns displayed such variability, it would seem that teachers have different perceptions of specific behaviors, as defined by the FSIA, which are then implemented according to a more personal teaching pattern. The instruction of IA for teachers may be one way to allow teachers to develop freedom of expression in their classrooms which



TABLE LVIII  
TOTAL NUMBER OF SIGNIFICANT CHANGES FOR EACH EXPERIMENTAL  
TEACHER

| I. D. | pre-post | post-delayed. post | total |
|-------|----------|--------------------|-------|
| 201   | 3        | 1                  | 4     |
| 202   | 6        | 0                  | 6     |
| 203   | 6        | 3                  | 9     |
| 204   | 3        | 3                  | 6     |
| 205   | 2        | 0                  | 2     |





TABLE LIX  
TEACHING PATTERNS OF THE EXPERIMENTAL TEACHERS ON  
ALL THREE PERIODS OF OBSERVATION

| I. D. | Pre-treatment | Post-treatment | Delayed Post-treatment |
|-------|---------------|----------------|------------------------|
| 201   | 4-8-2-4-8-7-8 | 8-2-4-8-8-4-8  | 4-8-2-4-8-8-4          |
| 202   | 4-8-2-4-8-7-8 | 4-8-2-4-8-8-7  | 8-2-4-8-8-3-8          |
| 203   | 4-8-2-4-8-7-8 | 4-8-8-2-4-8-4  | 9-9-3-4-8-8-2          |
| 204   | 4-8-2-4-9-2-4 | 4-8-2-4-8-3-8  | 4-8-2-4-9-2-4          |
| 205   | 4-8-2-4-4-8-7 | 4-8-3-8-2-4-8  | 4-8-2-4-4-8-8          |



perhaps is more consistent with their personal outlook on life.

The last three hypotheses all dealt with the change manifested by both groups in terms of individual teachers on each of the twelve sub-hypotheses. As a group, the control teachers did not change their behavior significantly from the pre- to the post-treatment observation period. When individual teachers were examined it was found that only teacher 101 changed significantly on two measures (revised i/d ratio and i/d rows 8 and 9). This was attributed to the fact that since her student teacher had taught the class for two weeks prior to the post-treatment observation, that she did not teach as she would normally have done if she had taught during this period. Teacher 105 changed significantly at the 0.002 level of confidence on the student talk index as she had made use of a tape recorder on the first occasion which resulted in the normal talk being distributed in the 10th category. Teacher 103 changed significantly on the i/d rows 8 and 9 measure. There does not seem to be any reason for this. He could not have been contaminated as the other teacher in his school was also a control teacher.

Although only the cited examples reached significance, it is notable that some of the teachers did change at the 0.05 to 0.01 levels of confidence on certain indices. This would seem to suggest that a VIF teacher will vary his behavior over a period of one month, both in a positive and negative direction. This change may be attributed to knowing the class better or specific considerations as to the VIF materials. However, it would seem that unforeseen forces are also at work. This possibility seemed to justify the use of the 0.001 level of



confidence in attributing change in behavior to the training effect. The experimental teachers exhibited a more consistent pattern of change which in many instances was statistically significant. These positive changes may be attributed to the training which the experimental teachers received.

Notably, all teachers did not change at the same rate or in the same way. This would suggest that teachers have different learning rates as well as different perceptions of behavior patterns which require change. This was borne out by the delayed post-treatment observation when some teachers further changed and others did so for the first time.

It is interesting to note the amount of variability demonstrated by the teachers. This may serve to point out how very complex the teaching behavior of a teacher actually is. Nevertheless, the results obtained from this study would suggest that training teachers in interaction analysis can make a difference in their teaching behavior in the transpositional steps in the Voix et Images de France method of French instruction.



CHAPTER VI  
SUMMARY, GENERALIZATIONS, IMPLICATIONS, AND  
RECOMMENDATIONS FOR FURTHER RESEARCH

SUMMARY

This study was undertaken for two reasons: to identify and quantify the behavior of a teacher in a semesterized high school where Voix et Images de France is the method of French instruction, and to determine whether or not training in interaction analysis would result in a change in teacher behavior.

In order to control possible variation, only teachers who taught levels 11 and 21 (the fourth and fifth years of VIF instruction) were eligible. Only the five steps, T2a to T4a, of the transpositional phase were observed.

Ten teachers, who taught in four semesterized high schools of the Edmonton Public School Board, volunteered to take part in the study. These teachers were matched on the basis of similar educational training and teaching experience. One teacher from each of these pairs was then randomly assigned to the experimental group while the other teacher was assigned to the control group.

The Flanders System of Interaction Analysis was used both as the training tool and the observational instrument. The treatment for the experimental group consisted of four weekly three-hour training sessions. Included in these training sessions were the theory of interaction analysis, coding practice, matrix tabulation, analysis and





interpretation of matrices, and the application of interaction analysis to the teaching of VIF. All training materials used pertained specifically to VIF and the five steps of transposition. Each session involved the active participation of each teacher in the above activities. Weekly homework for the experimental teachers consisted of reading the appropriate manual selections for the week's lesson and practicing what was learned on the materials acquired each week. This served to reinforce not only what was previously learned but also to integrate the whole training program i.e., once something was introduced it was practiced repeatedly during the program. In order to provide each experimental teacher with feedback, each was asked to bring a weekly fifteen-minute tape of teaching the class included in the experiment. Each of these three tapes was then coded and analyzed by the researcher and then discussed with the teachers the following week.

The experimental teachers were asked not to discuss the training with the control teachers. During the experiment, the control teachers were given no information and were instructed to continue teaching as they normally would.

In order to determine the efficacy of the training sessions, all teachers were observed on two consecutive days for one half hour on each occasion before the training began and again at the conclusion of the training. At this point, the control group was eliminated from the study. The experimental group was again observed, in an identical manner, six weeks after the post-training observations.

Eight major hypotheses were postulated, each having twelve identical sub-hypotheses which consisted of some of the indices commonly



analyzed in a Flanders matrix, namely: I/D ratio, revised i/d ratio, i/d row 8, i/d rows 8 and 9, extended i/d ratio, extended indirect influence, extended direct influence, vicious circle, 3-3 cell, 9-9 cell, teacher talk, and student talk. The ratios were analyzed by means of the Fisher z test in order to test the significance of the difference between proportions. The Chi-square test was used to test the significance of comparisons of isolated cells and areas of the matrix. All analyses, as well as matrix tabulation (by the Darwin Chi-square) were done by computer. The 0.001 level of significance was chosen to reject the null hypothesis.

The eight hypotheses were grouped according to three major comparisons. Hypotheses 1.0 and 2.0 dealt with the comparison of the two groups before and after the training. The second set of comparisons involved hypotheses 3.0, 4.0, and 5.0 which compared each group with itself before and after the training as well as the comparison of the post-treatment and delayed post-treatment indices for the experimental group. Hypotheses 6.0, 7.0 and 8.0 formed the third set of comparisons. These involved the comparisons of indices for each individual teacher before and after the treatment for both groups and a comparison of the experimental group between the post- and delayed post-treatment observations.

The results of the hypotheses are summarised in Table LX.

#### GENERALIZATIONS

The results of the statistical analysis allow one to make



TABLE LX  
SUMMARY TABLE OF THE HYPOTHESES

| Comparison | Sub-hypotheses | INTER-GROUP CORRELATION |       | GROUP BEHAVIOR MODIFICATION |       |          |      | INDIVIDUAL BEHAVIOR MODIFICATION |       |          |      |          |       |          |       |          |       |          |       |
|------------|----------------|-------------------------|-------|-----------------------------|-------|----------|------|----------------------------------|-------|----------|------|----------|-------|----------|-------|----------|-------|----------|-------|
|            |                |                         |       | CG                          |       | EG       |      | CG                               |       |          |      | EG       |       |          |       | PRE-POST |       |          |       |
|            |                | PRE                     | POST  | PRE-POST                    | POST  | PRE-POST | POST | PRE-POST                         | POST  | PRE-POST | POST | PRE-POST | POST  | PRE-POST | POST  | PRE-POST | POST  | PRE-POST | POST  |
|            | Hypotheses     | 1                       | 2     | 3                           | 4     | 5        |      | 6                                | 7     | 8        |      | 9        | 10    | 11       | 12    | 13       | 14    | 15       | 16    |
| I/D        | 1              | n.s.                    | n.s.  | n.s.                        | n.s.  | n.s.     |      | n.s.                             | n.s.  | n.s.     |      | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  |
| i/d        | 2              | n.s.                    | <.001 | n.s.                        | <.001 | <.001    |      | <.001                            | <.001 | <.001    |      | <.001    | <.001 | <.001    | <.001 | <.001    | <.001 | <.001    | <.001 |
| i/d 8      | 3              | n.s.                    | <.001 | n.s.                        | <.001 | n.s.     |      | n.s.                             | n.s.  | n.s.     |      | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  |
| i/d 8, 9   | 4              | n.s.                    | <.001 | n.s.                        | <.001 | n.s.     |      | n.s.                             | n.s.  | n.s.     |      | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  |
| ext. i/d   | 5              | n.s.                    | <.001 | n.s.                        | <.001 | <.001    |      | n.s.                             | n.s.  | n.s.     |      | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  |
| e. i. i.   | 6              | n.s.                    | <.001 | n.s.                        | <.001 | <.001    |      | n.s.                             | n.s.  | n.s.     |      | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  |
| e. d. i.   | 7              | n.s.                    | <.001 | n.s.                        | <.001 | <.001    |      | n.s.                             | n.s.  | n.s.     |      | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  |
| v. c.      | 8              | n.s.                    | n.s.  | n.s.                        | n.s.  | .001     |      | n.s.                             | n.s.  | n.s.     |      | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  |
| 3-3        | 9              | n.s.                    | <.001 | n.s.                        | <.001 | <.001    |      | n.s.                             | n.s.  | n.s.     |      | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  |
| 9-9        | 10             | n.s.                    | <.001 | n.s.                        | <.001 | <.001    |      | n.s.                             | n.s.  | n.s.     |      | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  |
| t. t.      | 11             | n.s.                    | <.001 | n.s.                        | <.001 | <.001    |      | n.s.                             | n.s.  | n.s.     |      | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  |
| s. t.      | 12             | n.s.                    | <.001 | n.s.                        | <.001 | <.001    |      | n.s.                             | n.s.  | n.s.     |      | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  | n.s.     | n.s.  |
|            | TOTAL          | 0                       | 9     | 0                           | 9     | 9        |      | 2                                | 0     | 1        |      | 3        | 6     | 6        | 6     | 3        | 2     | 1        | 0     |



several generalizations about the results of the experiment.

Regarding the inter-group correlation of the experimental and control groups, it was found that both groups were similar at the outset of the experiment. It could thus be concluded that the total matrix of the two groups should yield a fairly accurate picture of what high school VIF teachers are doing during the T2a to T4a steps of transposition.

The dramatic difference between the two groups at the 0.001 level of significance after the treatment suggests that the training in interaction analysis did make a difference to the experimental teachers' behavior. The teachers significantly modified their behavior on 9 of 12 indices. Only the I/D ratio, the extended direct influence, and the vicious circle index did not change significantly. This significant difference suggests that the training achieved its purpose, namely, to positively modify the teachers' teaching behavior so that the teachers became more positive in their response to pupil participation.

The comparison of the control group before and after the treatment revealed no significant differences. One might suggest, therefore, that teachers do not radically modify their teaching behavior during the period of one month if no external conditions are imposed.

The finding that the experimental teachers changed their behavior significantly on 9 of 12 indices (only the I/D ratio, extended direct influence, and the vicious circle did not change) suggests that this positive effect could be attributed to the training







in interaction analysis which they received. Also, the fact that the teachers again changed significantly on 9 of 12 measures (with the exception of the I/D ratio, i/d row 8, and i/d rows 8 and 9) on the delayed post-treatment observation as compared to the post-treatment observation is significant. This would suggest that some indices, such as the extended direct influence and vicious circle, require longer periods of time to be altered. It is noteworthy that of the three indices which did not change the first time, two did so on the second post-treatment observation. The I/D ratio is the only index which did not change significantly. This suggests that perhaps it is not discriminating enough or that it requires even more time to be affected. The result that the i/d row 8 and the i/d rows 8 and 9 changed significantly from the first to the second observation, but not on the third comparison would suggest that once motivating teacher behaviors are established, little further change may occur in them.

From the results of the changes exhibited by the experimental teachers, it is possible to conclude that significant change can occur in behaviors as measured by the experimental indices and that these behavioral changes require different amounts of time to be changed. In comparison to the other nine indices, the extended direct influence, and vicious circle behaviors required an additional six weeks of practice to be changed significantly during the experiment.

The comparison of individual teachers before and after the experiment led to further generalizations. The control teachers who did not receive any training did not change significantly other than for reasons of irregularity of teaching practice as described in Chapter



V. One might suggest, however, that teachers do vary considerably, both when compared to one another and when compared to themselves. Some changes did occur between the 0.10 and 0.01 levels of confidence but the pattern of individual teacher change does not seem to have been standard or predictable. This leads to the conclusion that Voix et Images de France is a very complex method. As teachers engaged in similar transpositional sequencing patterns, this does not explain the change, but knowing the students better may be a factor.

The comparison of the individual experimental teachers before and after the treatment resulted in different outcomes. One may assert that the training did account for the significant changes in behavior which were recorded. The teachers exhibited different changes both in quality and quantity. Some made significant changes on several indices while others made changes on a few. The fact that each teacher seemed to make different changes suggests that each may have perceived a different need for his particular behavior modification.

The comparison of post- and delayed post-treatment results also afforded some generalizations. Some of the teachers changed significantly this time where they had not done so on the first comparison. Some changed further on the same indices and some did not. Again, the pattern of change was not uniform. One might suggest that teachers have different learning rates and different personal perceptions of behavior modification.

The teacher who changed significantly on the greatest number of indices was a female who had five years of experience and four years of professional training. One male teacher, who had not changed



dramatically at first, continued to change on the second comparison. The three teachers who changed the most had from three to five years of VIF teaching experience and from four to six years of professional training. The other two male teachers, who were in this experience and training range, did not change significantly on the same number of indices. This would suggest that of the two controlling criteria, the VIF teaching experience was the more powerful.

To conclude, therefore, the results would indicate that VIF teachers not trained in interaction analysis may change somewhat in behavior although not according to any set pattern. Teachers who are trained can change significantly in behavior, as measured by the indices at some point in time when measured as a group. Changes may appear on different indices and at different rates when these teachers are compared individually. Of the two controlling criteria, VIF experience seemed to be more powerful than education training.

#### IMPLICATIONS

The results of the study have implications for the Voix et Images de France method of French instruction, the Flanders System of Interaction Analysis, the use of interaction analysis as an in-service activity, and the use of observational systems in research. Each of these four areas will be dealt with in turn.

#### Voix et Images de France

The description of the five steps, T2a to T4a of the





transpositional phase of VIF in terms of teacher behavior as recorded by the FSIA demonstrates that high school VIF teachers as a group tend to teach in a fairly similar manner regardless of sequencing pattern. The predominant teaching pattern of a regular teacher is 4-8-2-4-8-7-8. In terms of sequencing of transposition according to the method, the teachers demonstrated considerable variability. Those teachers with the least amount of experience used only the T2a (manipulation) step on the occasions of observation. This suggests that they used the method as prescribed, but that perhaps it was the only form of transposition which they used at any time. The more experienced teachers tended to sequence the steps in personal patterns. These results imply that, generally, teachers do not follow the prescribed pattern, i.e., each step following one after another in sequential order for the entire unit as prescribed by the authors.

The results of the training program suggest that the method is highly complex and that it requires a number of years to master it. It seems that in order for a teacher to voluntarily control his behavior, he needs to first have mastered the art of instruction of the program. This is implied by the results in that teachers with considerable experience teaching VIF tended to change their behavior on more of the variables examined.

A further implication is that teachers following the method tend to do so in a fairly predictable pattern. This may be the consequence of the rigid regulations which govern the implementation of the method. In terms of behavior, this pattern does not demonstrate teacher flexibility. Although teachers may use all of the steps of





transposition, they tend to do them in the same manner, i.e., very carefully controlled by the teacher. This is witnessed by the prevailing use of the secretary technique for both descriptions and résumés as well as the manipulation of variable elements in the T2a, T3a, and T4a. Only the experimental teachers were found to deviate from this rigid manipulation after the training, suggesting that perhaps the use of interaction analysis as an in-service activity allows the teacher to develop a more flexible, individualistic style of teaching VIF. The teachers who changed significantly did so in a direction more consistent with the objective of the program. This is supported by the emphasis given the 9-9 cell (extended self-initiated student talk) and the 3-3 cell (teacher use of student ideas) after the experiment and also six weeks later. The teachers no longer controlled the students' participation as rigidly as before. The students talked more, both in terms of response and self-initiated ideas and teachers allowed the students to do descriptions and résumés as self-initiated activities. It would seem that by allowing the students more freedom in the choice of their use of the target language greater opportunity for the development of fluency could result. A noteworthy observation in the experimental classrooms was that students, no longer as rigidly controlled, tended to correct themselves. (example: student: J'ira à le salle à manger, non, j'irai à la salle à manger.) They also tended to elaborate their own oral compositions.

The results of the study would indicate that interaction analysis appears to be a useful component in the training of VIF teachers in that it provides them with a framework in which to develop



skills designed to elicit more active student participation which is the goal of the program.

### Flanders System of Interaction Analysis

The study suggests that the FSIA is an effective tool in the instruction of VIF teachers in interaction analysis. From the significant results demonstrated by the experimental teachers, it would appear that they had effectively learned its use and application to their method of French instruction. The results of the study are consistent with those reported by Moskowitz in the use of interaction analysis in the second language classroom. The results also correlate with those of other subject areas in which secondary teachers were taught the FSIA.

In view of the fact that VIF teachers do not use English in the classroom, the system provides an accurate reflection of teacher talk. Although non-verbal behavior other than that consistent with the verbal behavior demonstrated was not prevalent, a category of such a nature would be useful. Also, if one were to examine other phases of a VIF lesson, a category for audio-visual aids would be essential.

Since one experimental teacher had equal student and teacher talk at the conclusion of the experiment, it is important to reappraise the use of seven categories for teacher talk and two for student talk. In view of the aforementioned result, two categories of student talk cannot adequately differentiate student participation with all its varieties. For example, a 9 can represent self-initiated questions on content, procedure, irrelevant information, helping a fellow student,



orally composing a lengthy description, résumé, or personally-based answer, and asking an original open question which was solicited by the teacher. Category 3, the use of student ideas can be elaborated to include acceptance of the idea, clarification of the idea, summarizing the idea, comparing one student answer with another, and developing it. These two categories seem to encompass a wide variety of meaning in practice.

A possible solution to the interpretation of categories 3 and 9 might be to subscript them as provided in Flanders subscripted version.<sup>1</sup> In terms of student participation in the classroom, an equivalent set of student categories might provide more information on the nature of student participation.

Another important variable in a language classroom is the amount of participation of each student. One has no way of knowing how many different students participated and how often they did so with the Flanders system. This would be very important in a study which correlated achievement with participation.

An underlying assumption of the Flanders system is that the teacher is the dominant force in the classroom. In terms of actual individual student participation, this seems to be true. However, as the trained teachers demonstrated, the gap between total teacher talk and total student talk can be decreased. This again supports the need to develop a more suitable distribution of talk categories for the two.

---

<sup>1</sup>N. A. Flanders, Analyzing Teaching Behavior (Reading: Addison-Wesley Publishing Co., 1970), pp. 140-41.





### In-Service Education

The in-service training in interaction analysis provided the VIF teachers was successful in that it did produce positive significant changes in their behavior. However, as the teachers changed in somewhat individualistic ways, it would suggest that this type of in-service training may provide the teacher with a framework in which to develop his own personal teaching style. This was demonstrated by the variety of behavior modification implemented by the teachers. Whereas initially the teachers were fairly similar in terms of talk distribution and teaching pattern, at the conclusion of the experiment this was altered.

The training program itself, which consisted of twelve hours of instruction, produced the significant results. The training sessions were based on an intense focus on the actual segment of classroom instruction being examined, the active participation of each teacher in the learning sessions, the open environment provided in which each teacher himself decided on the application of material to his style of teaching, and the weekly feedback on the teachers' evolving behavior patterns.

The teachers were found to demonstrate variability in terms of their integration of the material into their teaching behavior. It may be that allowing teachers the freedom to make their own choices is more valuable than approaches in which prescriptions are laid down. Teaching is a highly individualistic process. By providing a teacher with an objective feedback system such as interaction analysis which he





can apply to himself, this individual teaching behavior may become even more apparent. The above has implications for the entire teaching program in terms of pre-service and continuing teacher education. If a teacher has a tool with which to evaluate himself, he may find much of what is externally imposed on him as irrelevant. Such a situation might lead him to make his own decisions in terms of teaching practice. If the teacher can determine the effect of his behavior in terms of pupil attitudes and achievement, he may develop an entirely different philosophy on the teacher-pupil interaction. The possibilities are worth investigating.

#### Research using Observation Systems

Since the sample in the study was so small two deviations from standard research procedure were used: the 0.001 level of confidence was chosen to reject the null hypothesis, and the results for each individual teacher were reported. The results have demonstrated important implications for standard research using observational systems.

Since the activities observed were tightly controlled to eliminate the possibility of erroneous interpretation, the results may warrant comment. The study has demonstrated that (based on the small sample) normal, day to day VIF teaching behavior within the confines of the transpositional phase does vary between the 0.10 and 0.01 levels of confidence over the period of one month. This implies that the 0.01 level of significance may not be stringent enough to reject the null hypothesis when relatively small samples are used. Also,



since teachers did demonstrate considerable variety in terms of the variables examined, the documentation of group results alone may lead to fallacious conclusions, i.e., the experimental teachers may be said to change significantly when the result may be due to only a couple of teachers.

Since observation systems attempt to describe teacher behavior, it seems important that observed individual differences in teaching are reported since this study has demonstrated the variety of actual implementation of the interaction analysis information. These results may add some light to the complexity of individual behavior and its seemingly infinite varieties.

The six week follow-up has demonstrated that different teachers implement the training information not only in different ways but also at different rates. A month-long experimental period may not be long enough for some teachers to internalize the interaction information.

#### RECOMMENDATIONS FOR FURTHER RESEARCH

The results of the study suggest several areas to be further explored. It would be useful to:

1. Conduct a longitudinal study on the experimental VIF teachers to ascertain the rate of retention and modification of behavioral changes. Similarly conduct a longitudinal study of regular high school VIF teachers to determine the influence of time on their behavior.
2. Observe the other VIF phases: presentation, explanation,



repetition, reading and writing to determine how interaction takes place in those phases.

3. Replicate the study for junior high school VIF teachers.

4. Replicate the study for pre-service VIF teachers.

5. Replicate the study for Ecouter et Parler teachers, both pre- and in-service.

6. Continue a follow-up of those experimental teachers who demonstrated the greatest amount of positive behavior modification.

7. Develop a descriptive study of teachers trained in interaction analysis and describe the strategies which they evolve to bring about behavioral changes.

8. Replicate the present study using a larger sample. This would allow generalizations based on a more representative sample.

9. Develop an observational system for second language instruction which would consider in greater detail the verbal behavior of the students.



## BIBLIOGRAPHY





## SELECTED BIBLIOGRAPHY

### BOOKS

- Amidon, E. J., and P. Amidon. Interaction Analysis Training Kit Level I. Minneapolis: Association for Productive Teaching, 1967.
- Amidon, E. J., and J. B. Hough. Interaction Analysis: Theory, Research and Application. Reading: Addison-Wesley Publishing Co., 1967.
- Amidon, E. J., and E. Hunter. Improving Teaching, The Analysis of Classroom Verbal Interaction. New York: Holt, Rinehart and Winston, 1966.
- Amidon, E. J., and N. A. Flanders. The Role of the Teacher in the Classroom: A Manual for Understanding and Improving Teachers' Classroom Behavior. Minneapolis: Paul S. Amidon and Associates, 1971.
- Cathcart, R. S., and L. A. Samovar. Small Group Communication, a Reader. Dubuque: W. C. Brown Co., 1970.
- Clark, M., E. Erdway, and L. Beltzer, The Learning Encounter: The Classroom as a Communications Workshop. New York: Random House, 1971.
- Deighton, L. C. (ed.). Encyclopedia of Education. New York: Macmillan and Free Press, 1971.
- Ebel, R. L. (ed.). Encyclopedia of Educational Research. London: Macmillan Co., 1969.
- Ferguson, G. A. Statistical Analysis in Psychology and Education. New York: McGraw-Hill, 1966.
- Flanders, N. A. Analyzing Teaching Behavior. Reading: Addison-Wesley Publishing Co., 1970.
- Flanders, N. A. Interaction Analysis in the Classroom: A Manual for Observers. Ann Arbor: University of Michigan, 1966.
- Flanders, N. A. Teacher Influence, Pupil Attitudes and Achievement. Cooperative Research Monograph No. 12 (OE-25040), U. S. Office of Education, 1965.
- Gage, N. L. (ed.). Handbook of Research on Teaching. Chicago: Rand McNally and Co., 1963.
- Gallagher, P. A. Positive Classroom Performance: Techniques for Changing Behavior. Denver: Love Publishing Co., 1971.



- Gallagher, J. J., G. A. Nuthall, and B. Rosenshine. Classroom Observation. AERA Monograph Series on Curriculum Evaluation, No. 6. Chicago: Rand McNally and Co., 1970.
- Gorman, A. H. Teachers and Learners in the Interactive Process of Education. Boston: Allyn and Bacon, 1969.
- Gronlund, N. E. Stating Behavioral Objectives for Classroom Instruction. New York: Macmillan Co., 1970.
- Kerlinger, F. N. Foundations of Behavioral Research. New York: Holt, Rinehart and Winston, 1964.
- Mager, R. F. Developing Attitudes Toward Learning. Belmont: Fearon Publishers, 1968.
- Meacham, M. L., and A. E. Wiesen. Changing Classroom Behavior: A Manual for Precision Teaching. Scranton: International Textbook Co., 1969.
- Moskowitz, G. The Foreign Language Teacher Interacts. Minneapolis: Association for Productive Teaching, 1970.
- Ober, R. L., E. L. Bentley, and E. Miller. Systematic Observation of Teaching. Englewood Cliffs: Prentice Hall, 1971.
- Renard, C., and C. H. Heinle. Implementing Voix et Images de France (Part I) in American Schools and Colleges. Philadelphia: Chilton Books, 1969.
- Simon, A., and E. G. Boyer (eds.). Mirrors for Behavior II, An Anthology of Observation Instruments (Volumes A and B). Philadelphia: Research for Better Schools, 1970.

#### PERIODICALS

- Allon, N. R. "Systems of Classroom Interaction Analysis: A Discussion of Structural Limitations," Journal of Experimental Education, 38 (Winter, 1969), 1-3.
- Aspy, D. N. "Toward a Technology Which Helps Teachers Humanize their Classrooms," Educational Leadership, 28 (March, 1971), 626-33.
- Bailey, D. C. "Foreign Language Teaching: The Human Gap," French Review, 39 (October, 1965), 114-19.
- Banathy, B. H. "The Systems Approach," Modern Language Journal, 51 (May, 1967), 281-89.



- Bondi, J. C. Jr. "Feedback from Interaction Analysis: Some Implications for the Improvement of Teaching," Journal of Teacher Education, 21 (Summer, 1970), 189-96.
- Campbell, J. R., and C. W. Barnes. "Interaction Analysis - A Breakthrough?" Phi Delta Kappan, 50 (June, 1969), 587-90.
- Cor, L. W. "Humanizing Language Study," French Review, 40 (May, 1967), 817-22.
- Dillon, R. D., and R. L. Peterson. "The Influence of Video-taping Techniques on Student-Teacher Behavior in the Classroom," Audiovisual Instruction, 16 (March, 1971), 63-65.
- Evans, T. P. "Teacher Verbal and Nonverbal Behaviors and their Relationship to Personality," Journal of Experimental Education, 38 (Fall, 1969), 38-47.
- French, R. L., and C. M. Galloway. "A New Look at Classroom Interaction," Educational Leadership, 27 (March, 1970), 548-52.
- Hough, J. B., E. E. Lohman, and R. Ober. "Predicting Verbal Teaching Behavior in a General Methods Course," Journal of Teacher Education, 20 (Summer, 1969), 201-12.
- José, J., and J. J. Cody. "Teacher-Pupil Interaction as it Relates to Attempted Changes in Teacher Expectancy of Academic Ability and Achievement," American Educational Research Journal, 8 (January, 1971), 39-49.
- Klein, S. S. "Student Influence on Teacher Behavior," American Educational Research Journal, 8 (May, 1971), 403-21.
- Klopf, G. F. "Interaction Processes and Change," Educational Leadership, 27 (January, 1970), 334-38.
- Krahmer, E. J., et al. "A Computerized Approach to Calculating Interaction Analysis Observation Matrices and Ratios," Educational and Psychological Measurement, 29 (Spring, 1969), 187-190.
- Mason, J. L. "A Study of the Relationships between the Behavioral Styles of Classroom Teachers and the Quality of Teacher-Student Interpersonal Relations," Educational Leadership, 28 (October, 1970), 49-61.
- McArdle, R. J., and C. E. Scebold. "Report on the Workshop Seminar held at the University of Nebraska, Summer, 1968," Modern Language Journal, 52 (December, 1968), 502-03.
- Moskowitz, G. "A Comparison of Foreign Language Student Teachers Trained and Not Trained in Interaction Analysis," American Foreign Language Teacher, (October, 1970), 10-15.





- Moskowitz, G. "The Effects of Training in Interaction Analysis on the Behavior of Secondary School Teachers," High School Journal, 51 (October, 1967), 17-25.
- Moskowitz, G. "The Effects of Training Foreign Language Teachers in Interaction Analysis," Foreign Language Annals, 1 (March, 1968), 218-35.
- Moskowitz, G. "The Fearsome Foreign Language Hour," French Review, 38 (May, 1965), 781-86.
- Moskowitz, G. "Interaction Analysis - A New Modern Language for Supervisors," Foreign Language Annals, 5 (December, 1971), 211-21.
- Ornstein, A. C. "Systematizing Teacher Behavior Research," Phi Delta Kappan, 52 (May, 1971), 551-55.
- Pickett, L. A. "Can the Level of Instruction be Raised Through the Use of Interaction Analysis?" Educational Leadership, 27 (March, 1970), 597-600.
- Politzer, R. L. "Toward a Practice-Centered Program for the Training and Evaluation of Foreign Language Teachers," Modern Language Journal, 50 (May, 1966), 251-55.
- Radebaugh, B. F., and J. A. Johnson. "Excellent Teachers: What Makes Them Outstanding (Phase I)," Clearing House, 44 (November, 1969), 152-57.
- Radebaugh, B. F., and J. A. Johnson. "Excellent Teachers: What Makes Them Outstanding (Phase II)," Clearing House, 45 (March, 1971), 416-18.
- Reynolds, R. J. "Classroom Verbal Interaction Patterns as a Function of Instructor Cognitive Complexity," Journal of Teacher Education, 21 (Spring, 1970), 39-64.
- Rosenshine, B. "Evaluation of Classroom Instruction," Review of Educational Research, 40 (No. 2, 1970), 279-300.
- Rosenshine, B. "Interaction Analysis: A Tardy Comment," Phi Delta Kappan, 51 (April, 1970), 445-46.
- Saadeh, I. Q. "Teacher Effectiveness or Classroom Efficiency: A New Direction in the Evaluation of Teaching," Journal of Teacher Education, 21 (Spring, 1970), 73-91.
- Sandefur, J. T. "Kansas State Teachers College Experimental Study of Professional Education for Secondary Teachers," Journal of Teacher Education, 21 (Fall, 1970), 386-95.





- Schneyer, J. W. "Classroom Verbal Interaction and Pupil Learning," Reading Teacher, 23 (January, 1970), 363-71.
- Shrable, K. and D. Minnis. "Interacting in the Interrogative," Journal of Teacher Education, 20 (Summer, 1969), 201-12.
- Tuckman, B. W., K. M. McCall, and R. T. Hyman. "The Modification of Teacher Behavior: Effects of Dissonance and Coded Feedback," American Educational Research Journal, 6 (November, 1969), 607-19.
- Webb, J. N., and B. B. Brown. "The Effects of Training Observers of Classroom Behavior," Journal of Teacher Education, 21 (Summer, 1970), 197-202.
- Wragg, E. C. "Interaction Analysis in the Foreign Language Classroom," Modern Language Journal, 54 (February, 1970), 116-20.

#### MISCELLANEOUS

- Anderson, R. M. "A Study of the Classroom Verbal Teaching Behavior of Open-minded and Closed-minded Student Teachers Instructed in Flanders' Interaction Analysis." unpublished master's thesis, University of Alberta, 1969.
- Anderson, R. M. "A Comparison of Bales' and Flanders' Systems of Interaction Analysis as Research Tools in Small Group Discussion." unpublished doctoral dissertation, University of Alberta, 1972.
- Baron, R. W. "The Effect of Study Sessions in Flanders System of Interaction Analysis on the Classroom Communication Patterns of a Group of Team Teachers." unpublished master's thesis, University of Manitoba, 1968.
- Beam, K. J. "The Effect of Interaction Analysis Training and Feedback on Aspects of Science Teacher Classroom Intentions, Perceptions, and Behaviors." Paper read at the National Association for Research in Science Teaching Conference, April, 1972, Chicago, Illinois.
- Bond, P. Y. "The Effects of Feedback on Teachers' Verbal Behavior and Attitudes toward In-Service Education." unpublished doctoral dissertation, North Texas State University, 1969.
- Bosch, A. C. "Relationships of Teaching Patterns to Indices of Classroom Verbal Interaction Behavior." Paper read at the National Association for Research in Science Teaching Conference, April, 1972, Chicago, Illinois.



- Bowers, N. D., and R. S. Soar. "Evaluation of Laboratory Human Relations Training for Classroom Teachers." *Studies of Human Relations in the Teaching-Learning Process. V. Final Report Contract No. 8143 with the Cooperative Research Branch, United States Office of Education, Department of Health, Education and Welfare, 1961.*
- Briscoe, I. C. "A Study of the Effects of In-Service Training in Interaction Analysis on Teacher Attitudes, Teacher-Pupil Interaction Patterns, and Pupil Achievement in Reading." unpublished doctoral dissertation, University of Georgia, 1970.
- Browne, M. P. J. "An Exploratory Study of Teacher-Pupil Verbal Interaction in Primary Reading Groups." unpublished doctoral dissertation, University of Alberta, 1971.
- Burnett, D., D. Flathman, and M. Westrom. TEST 13: Flanders Interaction Analysis. Division of Educational Research Services, University of Alberta, 1971.
- Gagnon, M. "Relationship between Systematic Observation of Verbal Interaction and Pupil Success in Foreign Language Classes." unpublished doctoral dissertation, Stanford University, 1969.
- Gill, N. C. "The Effects of In-Service Training in Discussion Skills on Classroom Interaction Patterns." unpublished doctoral dissertation, University of Minnesota, 1970.
- Haefele, D. L. "The Effects of Training in Interaction Analysis on Subsequent Verbal Behavior of In-Service Teachers in Appalachia." unpublished doctoral dissertation, Syracuse University, 1970.
- Hill, J. C. "Change of Content Development Patterns Observed in Classroom Communication Behaviors due to In-Service Training in Content Strategies." Paper read at the annual meeting of the American Educational Research Association, 1971, New York.
- Hill, W. M. "The Effects on Verbal Teaching Behavior of Learning Interaction Analysis as an In-Service Education Activity." unpublished doctoral dissertation, Ohio State University, 1966.
- Hoehn, L. P. (ed.). "Teaching Behavior Improvement Program." Michigan-Ohio Regional Education Lab, July, 1969, Detroit.
- Jeffs, G. A. et al. "The Effects of Training in Interaction Analysis on the Verbal Behavior of Teachers." E. W. Clark High School, Las Vegas Nevada, October, 1968, U. S. Department of Health, Education and Welfare.
- Leader Training Conference Report (Second, February, 1969). Michigan-Ohio Regional Education Lab.



- Lohman, E. E. "A Study of the Effects of Preservice Training in Interaction Analysis on the Verbal Behavior of Student Teachers." unpublished doctoral dissertation, Ohio State University, 1966.
- Maurice, L. J. "A Method of Procedure Analysis in the Teaching of French as a Second Language." unpublished master's thesis, University of Manitoba, 1968.
- Monod, M. J. "The Four Phases of Voix et Images de France." B & W,  $\frac{1}{2}$  inch, 42 minutes, Department of Secondary Education, University of Alberta, 1969.
- Moskowitz, G. "The Effects of Training in Interaction Analysis on the Attitudes and Teaching Patterns of Cooperating Teachers and their Student Teachers." unpublished doctoral dissertation, Temple University, 1966.
- Nearhood, E. O. "An Examination of Teacher-Pupil Interaction in Third-Year French Classes." unpublished doctoral dissertation, Iowa State University, 1971.
- Nelson, L. N. "The Effect of Classroom Interaction on Pupil Linguistic Performance." unpublished doctoral dissertation, University of California, 1964.
- Parrish, H. W. "A Study of the Effects of In-Service Training in Interaction Analysis on the Verbal Behavior of Experienced Teachers." unpublished doctoral dissertation, University of Oregon, 1968.
- Peek, A. P. "Comparison of Awareness and Interpretation of Teacher Verbal Behavior Revealed Through Self-Analysis and Flanders System of Teacher Behavior." unpublished doctoral dissertation, East Texas State University, 1970.
- Raack, M. L. "The Effect of an In-Service Education Program on Teacher Verbal Behavior." unpublished doctoral dissertation, University of California, 1967.
- Renne, T. "The Effect of Verbalizers on the Achievement of Non-Verbalizers in an Enquiring Classroom." unpublished master's thesis, University of Alberta, 1970.
- Rose, R. D. "The Relationship of Attitudes, Knowledge, and Processes to Initial Teaching Behavior in Science." Paper read at the National Association for Research in Science Teaching Conference, April, 1972, Chicago, Illinois.
- Sandefur, J. T., and A. A. Bressler. "Classroom Observation Systems in Preparing School Personnel." Office of Education, Washington, March, 1970.



- Smidchens, U. "Classification of Teacher Episodes Through the Use of Teacher Influence Patterns." unpublished doctoral dissertation, University of Michigan, 1967.
- Suiter, P. E., and B. Queen. "Rationale, Development, and Validation of a Series of Self-Instructional Modules in Interaction Analysis." Appalachia Educational Lab, May, 1970, Charlestown.
- Westbury, I. D. "An Investigation of Some Aspects of Classroom Communications." unpublished doctoral dissertation, University of Alberta, 1968.
- Whitley, D. A. "A Behaviorist's Interaction Analysis: The Classroom Observation Schedule." Illinois State Office of the Superintendent of Public Instruction, July, 1969.
- Zahorik, J. A. "The Nature and Value of Teacher Verbal Behavior." unpublished doctoral dissertation, University of Wisconsin, 1966.







## APPENDICES



## APPENDIX A



APPENDIX A  
STUDENT ATTITUDE INVENTORY

A 23-item questionnaire dealing with student attitudes toward the study of French was administered to 675 students studying French in a large urban high school during the 1970-71 school year. Administrations were held at the beginning of September before the current school year was underway and again in June when instruction had ended.

Table LXI reports the number of students in French 11 and French 21 at the time of the two questionnaire administrations. The student responses for items 17, 18, and 23 are reported in Table LXII. The results of a comparison of items 17 and 23 using the Fisher z test are reported in Table LXIII.

TABLE LXI  
NUMBER OF STUDENTS IN FRENCH 11 AND FRENCH 21

| Month     | Level     | N   |
|-----------|-----------|-----|
| September | French 11 | 124 |
|           | French 21 | 75  |
| June      | French 11 | 104 |
|           | French 21 | 60  |



TABLE LXII

## STUDENT ATTITUDES TOWARD THE STUDY OF VOIX ET IMAGES DE FRANCE

| Item                                                  | French 11      |           | French 21      |           |
|-------------------------------------------------------|----------------|-----------|----------------|-----------|
|                                                       | September<br>% | June<br>% | September<br>% | June<br>% |
| 17. Most of my work in this class is done:            |                |           |                |           |
| A. to speak fluently                                  | 88             | 84        | 92             | 85        |
| B. to do grammar well                                 | 9              | 7         | 3              | 9         |
| C. to read extensively                                | 1              | 0         | 3              | 2         |
| D. to write well                                      | 2              | 6         | 1              | 2         |
| E. to do cultural studies                             | 0              | 3         | 1              | 2         |
| 18. During French class I feel:                       | 48             | 37        | 54             | 36        |
| A. extremely confident                                | 2              | 2         | 3              | 3         |
| B. quite confident                                    | 13             | 19        | 15             | 16        |
| C. confident                                          | 33             | 16        | 36             | 17 *      |
| D. a little unsure                                    | 42             | 47        | 36             | 40        |
| E. very unsure                                        | 10             | 16        | 10             | 24        |
|                                                       | 52             | 63        | 46             | 64        |
| 23. I feel I could converse with someone from France: | 44             | 47        | 39             | 42        |
| A. strongly agree                                     | 2              | 1         | 1              | 2         |
| B. agree                                              | 5              | 8         | 8              | 14        |
| C. tend to agree                                      | 37             | 38        | 30             | 26 *      |
| D. disagree                                           | 39             | 27        | 45             | 38        |
| E. strongly disagree                                  | 17             | 26        | 16             | 20        |
|                                                       | 56             | 53        | 61             | 58        |

\* Numbers above the line and separated indicate favorable responses.  
 Numbers below the line and separated indicate unfavorable responses.





TABLE LXIII  
COMPARISON OF PERCEIVED COURSE OBJECTIVE WITH  
ITS PERCEIVED ACHIEVEMENT

| month     | level     | proportion<br>of positive response |         | z     |
|-----------|-----------|------------------------------------|---------|-------|
|           |           | Item 17                            | Item 23 |       |
| September | French 11 | .88                                | .44     | 7.31* |
|           | French 21 | .92                                | .39     | 6.83* |
| June      | French 11 | .84                                | .47     | 5.64* |
|           | French 21 | .85                                | .42     | 4.89* |

\*  $p < .001$



## APPENDIX B



APPENDIX B

PROFESSIONAL INFORMATION

Name \_\_\_\_\_ School \_\_\_\_\_

Degrees held \_\_\_\_\_

Methods courses taken \_\_\_\_\_

Specific courses re: VIF \_\_\_\_\_

Workshops etc. re: VIF \_\_\_\_\_

Total years of teaching experience \_\_\_\_\_

Number of years teaching French \_\_\_\_\_

Number of years teaching VIF \_\_\_\_\_

Other French courses you have taught \_\_\_\_\_

\_\_\_\_\_

Other subjects you have taught \_\_\_\_\_

\_\_\_\_\_

Other pertinent information \_\_\_\_\_

\_\_\_\_\_

Which evenings during late January and February will you be free to

attend training sessions? \_\_\_\_\_

\_\_\_\_\_



| Time | Subject |
|------|---------|
|      |         |
|      |         |
|      |         |
|      |         |





## APPENDIX C



## APPENDIX C

### PILOT STUDY

Two teachers, one male and one female, who were not to take part in the study were observed on two occasions for twenty minutes on each occasion. The object of the observations was to determine whether or not knowledge of interaction analysis would result in any statistical differences in their behavior as measured by 12 variables. The two teachers were observed once and were then given three articles to read. These were:

1. G. Moskowitz, "The Effects of Training Foreign Language Teachers in Interaction Analysis," Foreign Language Annals, 1 (March, 1968), 218-35.
2. G. Moskowitz, "Interaction Analysis - A New Modern Language for Supervisors," Foreign Language Annals, 5 (December, 1971), 211-21.
3. E. C. Wragg, "Interaction Analysis in the Foreign Language Classroom," Modern Language Journal, 54 (February, 1970), 116-20.

A week later the two teachers were observed again in order to determine whether or not any behavioral differences occurred. The results are reported in the following tables. The same statistical procedures were used as for the study itself, i.e., the Fisher z and the Chi-square tests.

As some of the differences reached the 0.05 level of confidence or beyond it was decided to impose a more stringent level of statistical significance on the study proper. Therefore, the level chosen for the rejection of the null hypothesis was 0.001. It was felt that this level would allow generalizations based on the training itself. This level would tend to act as a safeguard against misinterpreting idiosyncratic behavior changes as due to the training effect.



TABLE LXIV  
COMPARISON OF RATIOS FOR PILOT TEACHER I ON THE  
TWO OBSERVATIONS

| Ratio    | Obs. 1 | Obs. 2 | difference | z      | p     |
|----------|--------|--------|------------|--------|-------|
| I/D      | .422   | .550   | .128       | -2.706 | < .01 |
| i/d      | .284   | .468   | .184       | -2.390 | < .05 |
| i/d 8    | .488   | .434   | .054       | 0.587  | n.s.  |
| i/d 8, 9 | .324   | .514   | .190       | -2.287 | < .05 |
| ext. i/d | .000   | .000   | .000       | .000   | n.s.  |

TABLE LXV  
COMPARISON OF INDICES FOR PILOT TEACHER I ON THE  
TWO OBSERVATIONS

| Index    | Obs. 1<br>% | Obs. 2<br>% | difference | df | $\chi^2$ | p    |
|----------|-------------|-------------|------------|----|----------|------|
| e. i. i. | 0.00        | 0.00        | 0.00       | 0  | 0.0      | 1.00 |
| e. d. i. | 0.80        | 0.50        | .30        | 1  | 0.0*     | .98  |
| v. c.    | 1.30        | 1.00        | .30        | 1  | .001*    | .98  |
| 3-3 cell | 0.00        | 0.00        | 0.00       | 0  | .0       | 1.00 |
| 9-9 cell | 1.80        | .50         | 1.30       | 1  | 1.74*    | .19  |
| t. t.    | 54.90       | 58.60       | 3.70       | 1  | 1.07     | .30  |
| s. t.    | 38.80       | 32.50       | 6.30       | 1  | 3.42     | .06  |

\* corrected for continuity



TABLE LXVI  
COMPARISON OF RATIOS FOR PILOT TEACHER II ON THE  
TWO OBSERVATIONS

| Ratio    | Obs. 1 | Obs. 2 | difference | z      | p     |
|----------|--------|--------|------------|--------|-------|
| I/D      | .528   | .435   | .093       | 2.003  | < .05 |
| i/d      | .465   | .457   | .008       | 0.128  | n.s.  |
| i/d 8    | .488   | .531   | .043       | -0.576 | n.s.  |
| i/d 8, 9 | .477   | .520   | .040       | -0.587 | n.s.  |
| ext. i/d | 1.000  | .250   | .750       | 1.732  | n.s.  |

TABLE LXVII  
COMPARISON OF INDICES FOR PILOT TEACHER II IN THE  
TWO OBSERVATIONS

| Index    | Obs. 1<br>% | Obs. 2<br>% | difference | df | $\chi^2$ | p    |
|----------|-------------|-------------|------------|----|----------|------|
| e. i. i. | 0.50        | 0.20        | 0.30       | 1  | .98*     | .98  |
| e. d. i. | .00         | .70         | .70        | 1  | 1.28*    | .26  |
| v. c.    | .50         | 2.40        | 1.90       | 1  | 5.16     | .02  |
| 3-3 cell | .00         | .00         | .00        | 0  | .00      | 1.00 |
| 9-9 cell | .00         | .00         | .00        | 0  | .00      | 1.00 |
| t. t.    | 62.80       | 59.90       | 2.90       | 1  | .75      | .39  |
| s. t.    | 29.90       | 32.60       | 2.70       | 1  | .69      | .41  |

\* corrected for continuity





## APPENDIX D



## APPENDIX D

### EPISODE C

- P: ### (1) Monsieur l'agent, de quelle couleur est votre bâton? (2)
- E: C'est une blanc. (3)
- P: C'est une blanc? La couleur oui, mais la réponse. (4)
- E: Il est blanc. (5)
- P: Plus fort! (6)
- E: Il est blanc. (7)
- P: Il est blanc. (8) De quelle couleur est le bâton de l'agent? (9)
- E: Il est blanc. (10)
- P: De quelle couleur, Judy, est le bâton de l'agent? (11)
- E: Il est blanc. (12)
- P: Très bien. (13) Maintenant Sandra, demandez à l'agent si son bâton est blanc. (14)
- E: Votre bâton est blanc? (15)
- E: Oui, il est blanc. (16)
- P: Très bien. (17) Qu'est-ce que l'agent répond? (18)
- E: Il répond que c'est son bâton est blanc. (19)
- P: Que son bâton. . . (20)
- E: est blanc. (21)
- P: Est-ce qu'il répond que son bâton est blanc? (22)
- E: Oui, il répond que son bâton est blanc. (23)
- P: Très bien. (24) Est-ce que l'agent répond que son bâton est blanc? (25)
- E: Oui, il répond que son bâton est blanc. (26)



- P: Très bien. (27) De quelle couleur est son bâton? (28)
- E: Il est blanc. (29)
- P: Plus fort! (30)
- E: Il est blanc. (31)
- P: Il est blanc. (32) De quelle couleur est son bâton? (33)
- E: Il est blanc. (34)
- P: Très bien. (35) Maintenant, que fait l'agent? (36)
- E: Il lève son bâton blanc. (37)
- P: Est-ce qu'il lève son bâton blanc? (38)
- E: Oui, il lève son bâton blanc. (39)
- P: Que fait-il? (40)
- E: Il lève son bâton blanc. (41)
- P: Où est l'agent? (42)
- E: Il est dans la rue. (43)
- P: Plus fort! (44)
- E: Il est. . . (45)
- P: oui (46)
- E: dans la rue. (47)
- P: Est-ce qu'il est dans la rue? (48)
- E: Oui, il est dans la rue. (49)
- P: Très bien. (50) Est-ce qu'il est dans la rue? (51)
- E: Oui, il est dans la rue. (52)
- P: Très bien. (53) Maintenant, l'agent lève son bâton blanc. (54)
- Et les autos, que font-elles? (55)
- E: Elles s'arrêtent. (56)
- P: Elles s'arrêtent. (57) Que font-elles? (58)



E: Elles arrêtent. (59)

P: elles. . . (60)

E: Elles s'arrêtent. (61)

P: Elles s'arrêtent. (62) Que font-elles? (63)

E: Elles s'arrêtent. (64)

P: Bien. (65) Quand est-ce que les voitures s'arrêtent? (66)

Levez la main! (67) Quand est-ce que les voitures s'arrêtent? (68)

E: Parce que l'agent lève son bâton. (69)

P: Oui, c'est pourquoi. (70) Maintenant quand. . .? (71)

E: Oh, quand! (72)

P: Scott? (73)

E: Quand l'agent lève son bâton blanc. (74)

P: Quand l'agent lève son bâton blanc. Bien. (75) Cynthia? (76)

E: Quand l'agent lève son bâton blanc. (77)

P: Maintenant, pourquoi est-ce que l'agent lève son bâton blanc? (78)

E: Parce que l'agent lève son bâton. (79)

P: Non (80) ### (81)

E: Parce que. . . (82)

P: Ecoutez! (83)

E: Il lève son bâton blanc parce que la dame attend (84) pour traverser  
et les voitures arrivent des deux côtés. (85)

P: Au, oui! (86) Maintenant, pourquoi est-ce que l'agent lève son  
bâton blanc? (87)

E: Parce que la dame attend pour traverser (88) et les autos arrivent  
des deux côtés. (89)

P: Les autos arrivent des deux côtés. (90) Maintenant, quand est-ce





que les autos s'arrê<sup>^</sup>tent? (91)

E: Quand [le] agent lève son bâton. (92)

P: [le] agent ou l'agent? (93)

E: l'agent (94)

P: Quand l'agent lève son bâton blanc. (95) Encore une fois! (96)

Judy, vous ê<sup>^</sup>tes Catherine. (97) Parlez! (98)

E: Ah! L'agent lève son bâton blanc. (99)

P: Très bien. (100) ### (101)

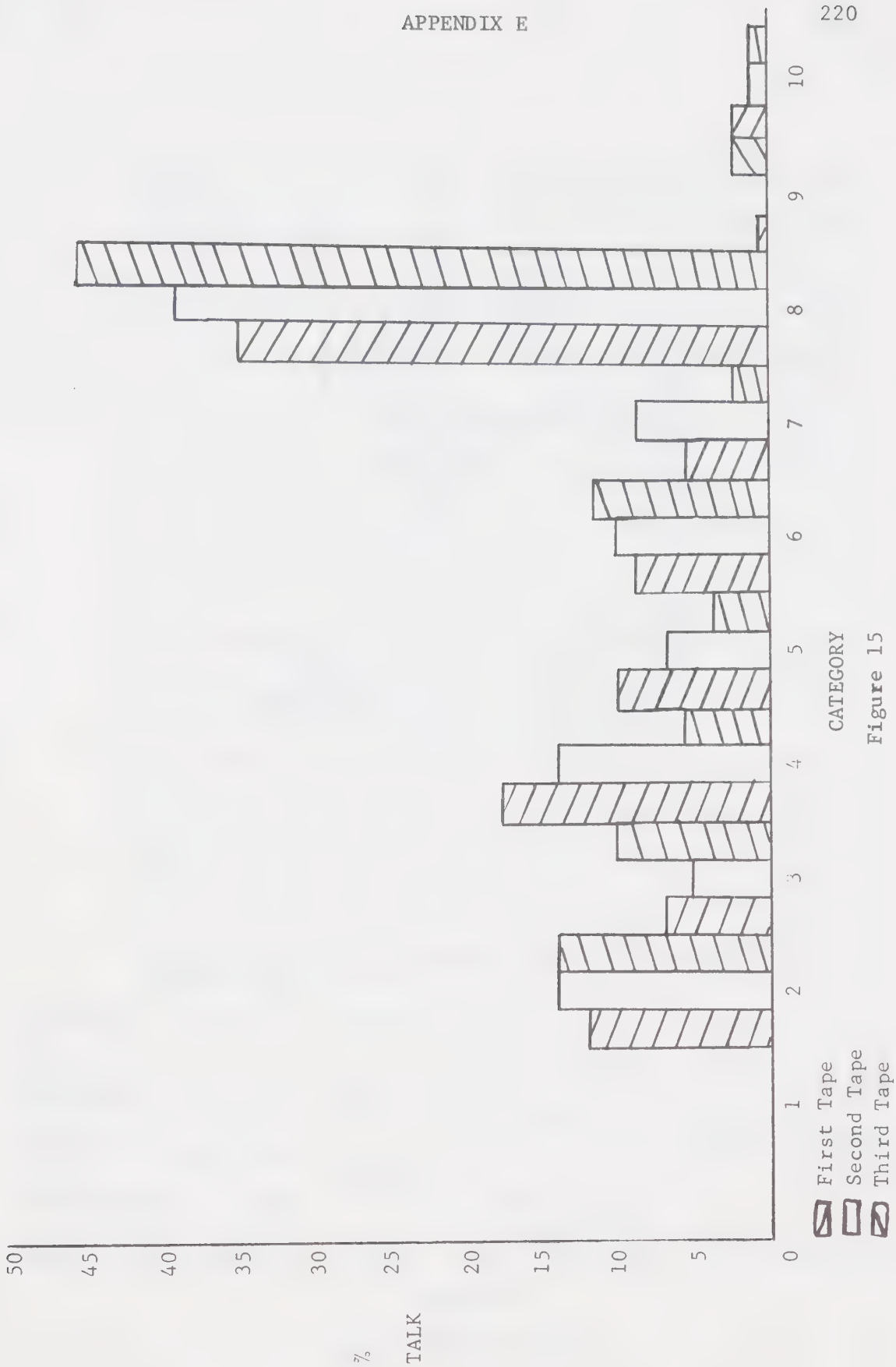






## APPENDIX E





Category Distribution for Feedback Tapes

Figure 15





| Category | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8   | 9 | 10 | Total |
|----------|---|----|----|----|----|----|----|-----|---|----|-------|
| 1        |   |    |    |    |    | 1  |    |     |   |    | 1     |
| 2        |   |    | 1  | 21 | 1  | 12 |    | 1   |   | 1  | 37    |
| 3        |   |    |    | 4  | 1  | 1  |    | 15  |   |    | 21    |
| 4        |   |    |    | 14 | 5  | 1  |    | 25  | 1 | 5  | 51    |
| 5        |   |    |    | 7  | 2  | 1  | 1  | 17  |   | 1  | 29    |
| 6        |   |    |    |    | 6  | 12 |    | 10  |   |    | 28    |
| 7        |   |    |    | 1  | 1  |    |    | 14  |   | 1  | 17    |
| 8        | 1 | 37 | 19 | 3  | 8  |    | 15 | 19  | 1 | 1  | 104   |
| 9        |   |    |    |    | 1  |    | 1  |     |   |    | 2     |
| 10       |   |    | 1  | 1  | 4  |    |    | 3   |   | 1  | 10    |
| Total    | 1 | 37 | 21 | 51 | 29 | 28 | 17 | 104 | 2 | 10 | 300   |
| %        | - | 12 | 7  | 17 | 10 | 9  | 6  | 35  | 1 | 3  | 100   |

Minimum number is 14

|                   |     |                   |       |                |       |
|-------------------|-----|-------------------|-------|----------------|-------|
| I/D Ratio         | .60 | Extended Indirect | .33%  | 3-3 Cell       | 0     |
| Revised i/d Ratio | .45 | Extended Direct   | 4.00% | 9-9 Cell       | 0     |
| i/d Row 8         | .63 | Extended i/d      | .76   | Vicious Circle | 4.33% |
| i/d Rows 8 & 9    | .62 |                   |       |                |       |
| Teacher Talk      | 61% | Student Talk      | 36%   | s/t            | .59   |

Figure 16

First Feedback Tape



| Category | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8   | 9 | 10 | Total |
|----------|---|----|----|----|----|----|----|-----|---|----|-------|
| 1        |   |    |    |    |    |    |    |     |   |    | -     |
| 2        |   |    |    | 17 | 1  | 19 |    | 3   |   | 2  | 42    |
| 3        |   |    |    |    | 4  |    |    | 12  |   |    | 16    |
| 4        |   |    |    | 9  | 3  |    |    | 22  |   | 4  | 42    |
| 5        |   |    |    | 4  |    | 1  |    | 15  |   |    | 20    |
| 6        |   |    |    | 3  | 3  | 2  |    | 21  |   | 1  | 30    |
| 7        |   |    |    | 1  | 4  | 2  |    | 20  |   |    | 27    |
| 8        |   | 42 | 16 | 6  | 4  | 5  | 27 | 17  |   |    | 117   |
| 9        |   |    |    |    |    |    |    |     |   |    | -     |
| 10       |   |    |    | 3  | 1  | 1  |    | 2   |   |    | 7     |
| Total    | - | 42 | 16 | 42 | 20 | 30 | 27 | 117 | - | 7  | 300   |
| %        | - | 14 | 5  | 14 | 7  | 10 | 9  | 39  | - | 2  | 100   |

Minimum number is 17

I/D Ratio .57

Extended Indirect 0

3-3 Cell 0

Revised i/d Ratio .50

Extended Direct 1.33%

9-9 Cell 0

i/d Row 8 .65

Extended i/d 0

Vicious Circle 1.67%

i/d Rows 8 & 9 .65

Teacher Talk 59%

Student Talk 39%

s/t .67

Figure 17

Second Feedback Tape



| Category | 1 | 2  | 3  | 4  | 5  | 6  | 7 | 8   | 9 | 10 | Total |
|----------|---|----|----|----|----|----|---|-----|---|----|-------|
| 1        |   |    |    |    |    |    |   |     |   |    | -     |
| 2        |   |    |    | 4  | 1  | 22 |   | 10  | 2 | 2  | 41    |
| 3        |   | 1  |    | 4  |    |    |   | 24  |   |    | 29    |
| 4        |   |    |    | 1  | 1  |    |   | 13  | 2 | 2  | 19    |
| 5        |   |    |    | 3  |    | 1  |   | 6   | 1 |    | 11    |
| 6        |   |    |    | 2  | 2  | 10 |   | 22  | 1 |    | 37    |
| 7        |   |    |    | 2  |    |    |   | 7   |   |    | 9     |
| 8        |   | 35 | 26 | 3  | 5  | 3  | 9 | 55  |   | 3  | 139   |
| 9        |   | 5  | 3  |    |    |    |   |     |   |    | 8     |
| 10       |   |    |    |    | 2  | 1  |   | 2   | 2 |    | 7     |
| Total    | - | 41 | 29 | 19 | 11 | 37 | 9 | 139 | 8 | 7  | 300   |
| %        | - | 14 | 10 | 6  | 4  | 12 | 3 | 46  | 3 | 2  | 100   |

Minimum number is 22

I/D Ratio .61

Extended Indirect .33%

3-3 Cell 0

Revised i/d Ratio .60

Extended Direct 3.33%

9-9 Cell 0

i/d Row 8 .84

Extended i/d .91

Vicious Circle 3.33%

i/d Rows 8 & 9 .85

Teacher Talk 49%

Student Talk 49%

s/t 1.0

Figure 18

Third Feedback Tape

















**B30030**